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THE CHILD

HIS THINKING, FEELING, AND DOING

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THE CHILD

HIS THINKING, FEELING, AND DOING

By

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CENTRAL MISSOURI
STATE UNIVERSITY
Warrensburg,
Missouri

RAND, McNALLY & COMPANY

Chicago *New York* *London*

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The Rand-McNally Press
Chicago

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THE PREFACE

In working over the mass of material which has accumulated on Child-Study, I have been most impressed by the fact that even now so few general laws can be formulated about child-nature. The material is still in a chaotic state, and seems destined to remain so for some time, because the reports from different authorities are so conflicting. In many cases the conflict is doubtless due to different conditions of observation; but in other cases it is due to differences in children resulting from heredity, nationality, or from surroundings—homes, food, and education. I therefore appreciate the fact that some of the observations given here will be seriously modified by later ones. I do not necessarily defend the observations which I cite; I only present the most reliable and leave them for confirmation or rebuttal.

On this account, I have not attempted to draw many general conclusions, or to work out any complete educational theory. I have aimed rather to bring together under one cover a summary of the important work done thus far in Child-Study, so that the teacher and mother who have little access to libraries may understand something of what the condition of the subject is, and may, if so disposed, contribute toward filling up its gaps. This side of the matter is the more prominent in my own mind because the book is the direct outcome of the difficulties which I met in teaching the subject to my classes in the University College of the University of Chicago. There

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seemed to be a need for a book which should give a résumé of observations which at that time were to be obtained only in all sorts of magazines and books, and which were yet necessary to an understanding of the subject. Such a book would also, it seemed to me, furnish something of the perspective which is necessarily lacking in scattered reading, would serve as a stimulus to more careful study of the children with whom we deal every day, and would aid in preparing the soil for a better educational theory than at present prevails.

Although lacking in theory, the book should still serve as a background upon which to sketch in details of the child whom we know best. In the study of one child or of a few children, to which we are most of us limited, we are rather prone to conclude that characteristics which are in truth peculiar to the little group known to us belong to all children. A knowledge of these wider observations will prevent such errors and will lead to more careful study.

Grateful acknowledgment is hereby made to Dr. Stuart H. Rowe, Lecturer on Pedagogy at Yale University, who read the manuscript of this book and made many valuable suggestions; to the *Pedagogical Seminary* for permission to reproduce the charts found on pages 331 and 408; to the *Elementary School Record* for permission to quote from Mrs. May Root Kern's article on Song Composition, and to the many authors whose works I have consulted freely.

AMY ELIZA TANNER.

December, 1903.

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THE ABBREVIATIONS

Alien. and Anthrop.....Alienist and Anthropologist
Alien. and Neur.....Alienist and Neurologist
Am. Jour. Folk Lore ....American Journal of Folk Lore
Am. Jour. Psy.....American Journal of Psychology
Am. Jour. Soc.....American Journal of Sociology
Am. Nat.....American Naturalist
Am. Phys. Ed. Rev.....American Physical Education Review
Boston Med. & Surg. Jour.....Boston Medical and Surgical Journal
C. S. M.....Child Study Monthly
Contemp. Rev.....Contemporary Review
Educ..... .... Education
Ed. Rev.....Educational Review
Inland Ed.....Inland Educator
Int. Jour. Ethics.....International Journal of Ethics
Jour. of Anthrop. Inst. of G. B. & Ireland....Journal of the Anthropological Institute of Great Britain and Ireland
Jour. of Ed.....Journal of Education
Jour. of Ped.....Journal of Pedagogy
Kgn. Mag.....Kindergarten Magazine
Kgn. Rev.....Kindergarten Review
Mag. of Art.....Magazine of Art
Med. Mag.....Medical Magazine
Med. Rev..... Medical Review
Mind, N. S.....Mind, New Series
Montreal Med. Jour.....Montreal Medical Journal
N. Am. Rev.....North American Review
N. W. Mo.....Northwestern Monthly
Ped. Sem..... Pedagogical Seminary
Phil. Rev.....Philosophical Review
Pop. Sc. Mo.....Popular Science Monthly
Proc. Am. Assn. Adv. Sc.....Proceedings of the American Association for the Advancement of Science

Proc. Assn. of Phys. Ed.....Proceedings of the Association of Physical Education
Proc. N. E. A.....Proceedings of the National Education Association.
Proc. Intern. Cong. Ed.....Proceedings of the International Congress of Education
Psy. Rev.....Psychological Review
Psy. Rev. Monograph Sup.....Physical Review Monograph Supplement
Rept. of Com. of Ed.....Report of the Commissioner of Education
Rept. of Supts. of Ed. of N. Y.....Report of the Superintendents of Education of New York
Science, N. S.....Science, New Series
Studies from Yale Psy. Lab.....Studies from Yale Psychological Laboratory
Texas Academy of Sc.....Texas Academy of Science
Trans. Am. Med. Assn.....Transactions of the American Medical Association
Trans. Am. Phil. Assn.....Transactions of the American Philological Association
Trans. Ill. Soc. C. S.....Transactions of the Illinois Society for Child Study
U. of Cal. Studies.....University of California Studies
West. Rev.....Westminster Review

THE CHILD

HIS THINKING, FEELING AND DOING

CHAPTER I

Introduction

NATURALLY enough, children have always been objects of the greatest care and solicitude to society, and have always been observed and studied, as early educational theories show. Still, while some systematic observation has been done before, it has been left for our scientific age to attempt to reduce children, along with men, to the terms of a general formula.

Child-Study. Its importance.

The importance of ascertaining the laws that govern the growth of the child's body and mind is apparent to the most superficial observer. Until we know how a child grows; whether he is of the average height and weight or not; whether he has the average control of his body or not; whether he shows signs of nervousness or not, we can know nothing of what the correct treatment for that child is. We may hit accidentally upon it, but we are just as likely to leave the child to suffer from improper food or exercise or work. Similarly, until we know the general characteristics of each stage of mental development, we are unprepared to say what a child should study and how much he can do. We can not settle any of the questions concerning the courses of study, the order of subjects

and the mode of presenting a subject, except as we know the child-nature which we expect to develop by our education.

Now there is a great body of facts about children, which has been obtained from the casual contact that we all have with them, and which is in some respects accurate and in others inaccurate. It is the object of systematic Child-Study to supplement and to correct these common ideas by a more careful study of the facts, and so to give a firmer foundation for educational theory and practice.

In this study, two methods are possible, each of which may be pursued in two different ways: (1) We may study some individual child with great care and detail, or (2) we may collect statistics from large numbers of children. In both cases we may get our material simply from observing children, or experiment upon them by fixing certain conditions under which they shall act.

Methods of Child-Study.

(1) Individual study has the decided advantage of accuracy in details. We become intimately acquainted with some one child, and learn to see the various fine shadings of his mind. We discern the gradually increasing complexity of his mental processes. We can see the close connection between mind and body in many details, and trace to their origin numerous quaint ideas and marked characteristics. In this way we can learn to deal with this one child so that we shall make comparatively few mistakes, even though our theoretical knowledge be not very wide.

On the other hand, such a study fails us in many respects when we come to work with other children. We can not be certain which of this child's traits are

peculiar to him or his family and which are common to all children of his age, nor can we be sure just what importance to attach to certain traits. We can not tell whether to ignore them because they will naturally be outgrown, or to repress them.

(2) Statistical study aims to give just this sort of information. It collects data from large numbers of children of all ages, compares them, and finally is able to make a statement about certain characteristics of the great majority of children of each age. Such general statements, when based upon sufficient data, rest upon the same kind of foundation that the laws of any science do, and have the same authority.

It is evident that such statistical study is strong where individual study is weak and, vice versa, is weak where individual study is strong. It lacks the detail and vividness of the individual study, but is more generally true and is likely to be a safer guide when difficulties come up in treating the average child whom we have not had the opportunity to study. The two methods should, therefore, supplement each other. Each parent or teacher should get a perspective for himself by a knowledge of the general facts of child-nature, and then fill in details by a study of the Mary and Johnnie with whom she lives.

This outline of child-nature is what Child-Study hopes to accomplish, but as yet the outline is fragmentary. More observations have been made on the physical nature of the child than on anything else, but even here there is great divergence of opinion as to the meaning of the facts observed and as to their practical bearing. Good work has been done on small groups of children

Results of Child-Study.

in observing most of the mental processes and some of the forms of expression. From this we may get hints for an educational theory, but it is valuable so far principally in giving suggestions for further observations.

If, therefore, few conclusions are reached in the study given here, it must be remembered that this is inevitable under present conditions. It is easy to form a theory if we have studied only a few children, but the more data we gather from large numbers of children the more probable it seems that our present educational theories must be considerably enlarged and altered before they will be applicable to most children.

The object of this book is not, therefore, so much to offer conclusions, as to outline what has been done, to show breaks in the outline, and to point out places for future work.

Plan.

In pursuance of this object, the physical nature of the child, and its relation to his mental development, will be considered first. The study of his mental growth, beginning with sensation and perception, through memory and imagination to thought, will follow. The treatment here will necessarily be inadequate in some respects. We shall then consider what little we know of the child's feelings and emotions; and finally trace the expression of his thoughts and feelings in his instinctive actions, in his speech and imitation, and in his play, drawing, and music.

The teacher or leader of the class should start each member upon systematic observation of some child or group of children along one of the lines indicated in the observations at the beginning of each chapter. With this in view, it would be well to spend a part of

the first lesson in the reading and discussion of the suggestions, and in an apportionment of the subjects among the members of the class. Of course no one person will undertake observations upon all the subjects, unless he wishes to study but one child. In such a case, he would do well to get Miss Shinn's *Biography of a Baby*, or Preyer's *Infant Mind*, for more detailed accounts. Teachers usually find it better to take some one subject, frame a syllabus, and get material from all the children in their room or school.*

Directions to the student.

Even if such observation is continued only while the class is continued, it will serve to give point and suggestion to every chapter in the book, and in many cases it will lead to further study and to more sympathetic treatment of children. By far the most valuable part of the study is lost if observation is not undertaken for, after all, a book should but lead us on to a deeper understanding of life. The following directions may assist those about to begin making observations:

Directions for observation.

1 Any parents or teachers who intend to keep a systematic record of one child, should get a fair-sized note-book, and enter in it the nationality of the child, the sex, and the exact date (hour and day) of birth. Where statistics are to be obtained from numbers of children, loose sheets of paper are more usable. Each sheet should have on it the nationality, sex and approximate age

*In cases where either a detailed or a general study is taken up, if a more general use of the results is desired, the author will appreciate any data that are sent to her, and will give full acknowledgement of any use that she may make of them. She can be addressed in care of the publishers.

of the child (within six months) at the time when the data were obtained. No names are necessary.

2 In keeping the record, date each entry exactly and give the age of each child at the time of the event.

3 Record the event at the time when it occurred, if possible; if not possible, state how long a time elapsed before the entry was made. An entry made several days after the event has little value.

4 Record the event minutely and exactly

CHAPTER II

Growth of the Body

ALL weighing should be done on the nude child, and all measuring without his shoes on.

1. Beginning with birth, keep a record of the changes in weight and height. For the first month, weigh and measure the baby every week; thence, to the end of the first year, every month; thence, every three or six months. There is very little material at present on changes between the first and the sixth year, and any parents who will keep such a record carefully will help to fill one of the gaps in the subject of Child-Study.

Observations.

2. If you do not undertake any systematic record, at least weigh and measure your children now and see how they compare with the average weight and height as shown in the tables.

3. In some schools, it is possible for a teacher to get statistics as to the height and weight of each child in her room. Where she can not do so, she can usually get the height and weight of children who are peculiar, to see how they compare with the average height and weight as shown in the tables.

4. In cases where children fall below the average, begin a little experimenting, if possible under a physician's advice, with their food and work. Keep a record of the changes you make in the food and the work, and of the effect upon the children.

As our knowledge of the mind increases we see more and more the close inter-relation of mind and body, and we realize that in trying to understand the condition of either at any time, we must take into consideration the

Importance of the subject.

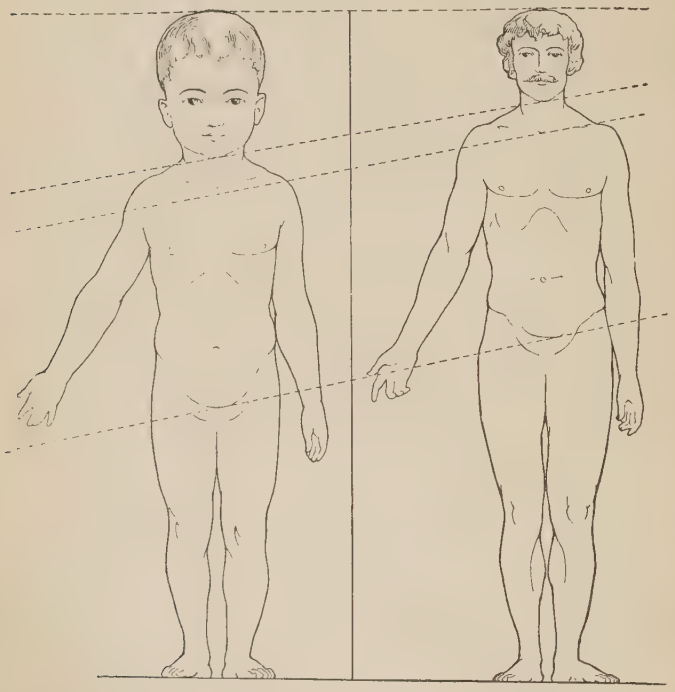
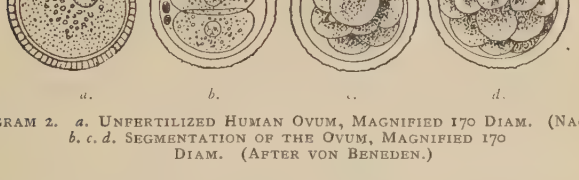


DIAGRAM 1. SHOWING THE RELATIVE PROPORTIONS OF THE BODY IN CHILD AND ADULT. (LANGER.)

effect of each upon the other. We have no right to expect the same mental work or the same moral standards from a child who is sick, or cold, or hungry, as from the one who is healthy, well-fed, and well-clad.

The parent whose child is much below the average in growth, or in the control of his muscles, should be warned thereby to be on the watch for various mental or moral abnormalities. As there is no way of watching a child's mind except as he reveals it through his movements, it becomes of great importance that we should understand at least a little of what his movements signify.

It is not uncommonly assumed that a child is simply a little man or woman. How untrue this is as to his



a. *b.* *c.* *d.*

DIAGRAM 2. *a.* UNFERTILIZED HUMAN OVUM, MAGNIFIED 170 DIAM. (NAGEL.) *b. c. d.* SEGMENTATION OF THE OVUM, MAGNIFIED 170 DIAM. (AFTER VON BENEDEN.)

body, a glance at Diagram 1 reveals. A child who grew to manhood preserving his childish proportions would be a monstrosity. What is so evidently true of the body as a whole applies equally to details. The internal organs, the bones, blood, fat, marrow and nerves, all differ so materially from the adult's that when similar chemical structures are found in him, they are considered pathological. We can not, therefore, believe that a child can eat the same food, breathe the same air, wear the same clothing and take the same exercise as an adult, and obtain the highest degree of health.

Child versus man.

The human body consists at first of but a single cell, of the general shape and size shown in Diagram 2.

When the cell begins to grow, it increases in size and after a time divides into two. Each of these cells does the same, and so on, the entire mass of cells increasing in number and in size. When the organs of the body begin to form, the mode of growth changes. The cells no longer increase in number, but change their form, size, and relations to other cells. In the nervous system, the entire number of nerve cells is complete by the fifth month of foetal life. From this it has been hastily concluded that the effects of education must be very limited, since all that education can do, at the most, is to develop cells already existing. The incorrectness of such a conclusion is seen when we understand that there are millions of nerve cells undeveloped in even the most cultured adult. So far education seems to have developed some hundreds of thousands of cells. With millions still untouched, we need hardly fear any curtailment of educational functions for a long time.

Development of the body.

Considering first the increase in weight from birth to adolescence, observations upon hundreds of thousands of children show that at birth the average weight of a boy is 7.3 pounds; of a girl, 7.1 pounds. The boys' weights vary from 3 pounds to 12 pounds, but 87 per cent of them weigh between 6 and 9 pounds. The weight of the girls comes within the limits of 4 and 11 pounds, with 85 per cent between 6 and 9 pounds. The limits of safety, then, for both boys and girls seem to be 6 and 9 pounds.

Weight.

By the end of the first year, a child's weight should have trebled. That is, an average boy should weigh 21.9 pounds, and an average girl 21.3 pounds.

The effect of the child's food upon this first year's growth is still a much disputed question. Camerer, a German physician, observed that it seemed to make little difference whether the food was artificial or natural. He found that fifty-seven children fed upon mother's milk weighed less at the end of the first year than thirty-one others, lighter at birth, who had been nourished on artificial food. Many mothers believe that at any cost they must nurse their children, but this seems, in many cases, to work a direct harm to the child. If the mother is not well, the milk may not contain all the necessary food-elements in the right proportions and the baby may actually starve. The advice of a good physician should be followed in all cases.

Effect of food.

By the sixth year, the average boy weighs 45.2 pounds; the average girl, 43.4 pounds. Thence to the seventeenth year, the following table shows the weights in pounds, with ordinary indoor clothing.

BURK'S TABLE SHOWING AVERAGE WEIGHT OF 68,000 AMERICAN CHILDREN IN BOSTON, ST. LOUIS, AND MILWAUKEE

AGE	BOYS			GIRLS		
	Average in lbs.	Annual Increase	Per Cent of Increase	Average in lbs.	Annual Increase	Per Cent of Increase
6½	45.2			43.4		
7½	49.5	4.3	9.5	47.7	4.3	9.9
8½	54.5	5.0	10.1	52.5	4.8	10.0
9½	59.6	5.1	9.3	57.4	4.9	9.3
10½	65.4	5.8	9.7	62.9	5.5	9.6
11½	70.7	5.3	8.1	69.5	6.6	10.5
12½	76.9	6.2	8.7	78.7	9.2	13.2
13½	84.8	7.9	10.3	88.7	10.0	12.7
14½	95.2	10.4	12.3	98.3	9.6	11.9
15½	107.4	12.2	12.8	106.7	8.4	8.5
16½	121.0	13.6	12.7	112.3	5.6	5.2

Examination of this table will show that there is with boys a period of fairly rapid increase from 7½ to 10½ years, then a slower rate to 13½ years, and a still more rapid rate of growth from 13½ years on. The growth of girls is more steady, but still there are well-defined periods of acceleration from 7½ to 9½ years and from 12½ to 14½ years. In general, girls weigh less than boys from birth on, except from the twelfth to the fourteenth years, when they weigh more.

Height.

The average newborn boy measures 19.68 inches, with the extreme limits at 15 and 24 inches; the newborn girl 19.48 inches, with the limits at 16 and 23 inches. The most rapid growth in height, as in weight, is in the first months of life. In the first month, a child adds something like 2½ inches to his length and by the end of the first year, has increased from 7 to 8 inches. At the time of the first dentition Camerer observed a lessening of the rate of growth At the age of six years, the average boy measures 44.10 inches, the average girl, 43.66 inches. Thence to the seventeenth year, their average heights in inches are shown in the following table.*

Years.....	6	7	8	9	10	11	12	13	14	15	16	17
Boys.....	44.10	46.21	48.16	50.09	52.21	54.01	55.78	58.17	61.08	62.96	65.58	66.29
Girls.....	43.66	45.94	48.07	49.61	51.78	53.79	57.16	58.75	60.32	61.39	61.72	61.99

*These measurements were taken without shoes. As only American children are included in them, the measures are slightly larger than the average. The American-born child is slightly taller and heavier than the English, Irish, German or Scandinavian child. No comparative measurements exist for other nationalities. We should also note here that the periods of most rapid increase, both in height and in weight, are put from one to two years earlier by some writers. Doubtless food, nationality, and climate influence this. This table is taken from Bowditch.

Here again we note a rhythm of much the same nature as that of the increase in weight. The boys, as a rule, are taller than the girls except between the years of twelve and fourteen. Their periods of growth are more sharply defined, and individuals differ from each other within wider limits The differences between individuals also increase with age. It is sometimes said that up to adolescence a child lives the race life; at adolescence, there is a strong development of family traits, and thereafter the child becomes more individual.

The most marked fluctuations in growth occur between the years of six and nine for both boys and girls, and again between eleven and thirteen for girls, and fourteen and sixteen for boys. The first period is closely connected with the getting of the second teeth, and with the fact that at this time the brain is rapidly developing fibers of connection between its various parts. On account of this brain growth, there is usually a marked mental change in each child. He has more interests, he plays more kinds of games, and he has a wider range of friends than before. The second change is the accompaniment of puberty and will be considered later.

Rhythms of growth and other changes.

It is most interesting to notice that, taking into consideration all the observations made, periods of rapid growth in height *precede* periods of rapid growth in weight, although this is not so marked with girls as with boys. This is true not only of the larger periods of which we have spoken, but of shorter ones as well.

Relations between growth in height and in weight.

R. Malling-Hansen of Copenhagen, made observations upon seventy boys from seven to fifteen years of age, for a period of two years, to find out what rhythms of growth occur within the cycle of the year. He found these well marked both in height and in weight. The period of most rapid growth in weight is from August to December; of average growth, from December to the end of April, and of least growth from April to August. Conversely, the greatest increase in height, is from April to August, and the least from August to December.

Shorter rhythms of growth.

Within each month he observed rhythmical alternations, a period of growth of perhaps fifteen days alternating with one of comparative rest. He also found a similar rhythm within the week; and noticed that during the day children increase in weight and decrease in height, while during the night the converse is true. Heat and light seem to accelerate increase in weight. Camerer corroborates Malling-Hansen in most of his observations; and Vierordt and Fleischmann also corroborate the weekly rhythms.

None of these observers has dealt with large numbers of children, and therefore we need further data before we can be sure that these rhythms are universal; but the various observers agree as far as they have gone, and there seems to be no good reason *a priori* why the facts should not be generally true

When we consider the growth of the various organs of the body, and of the skeleton, muscles and nervous system, the most striking fact is that it is irregular. At any given time, certain parts will be developing rapidly, and others slowly. The details of this growth

are much too complex to be given here, and their meaning is not yet understood. It need only be stated that at adolescence the heart and lungs, as well as the reproductive organs, are growing very rapidly, and that between seven and nine the brain is developing numerous fibers of connection, although it is increasing little if any in size.

Growth of different parts of the body.

VIERORDT'S TABLE, SHOWING THE RELATIVE GROWTH OF VARIOUS PARTS OF THE BODY, COUNTING SIZE AT BIRTH AS 100.

	BIRTH	END OF 21 MOS.	7⅛ YRS.	ADULT
Length of head	100	150	191.7	200
Upper part of head	100	114	150	157
Length of face	100	200	250	260
From chin to upper end of breastbone.	100	500	700	900
Breastbone	100	186	300	314
Abdomen	100	160	240	260
Leg	100	200	455	472
Height of foot	100	150	300	450
Upper arm	100	183	328	350
Forearm	100	182	322	350

It goes without saying that a child that is well fed will be taller and heavier than he would be if he went hungry, but there is another and erroneous idea connected with this. We often assume that any well-fed child will be taller and heavier than any poorly fed one. This is not so. Size depends, not only upon good nutrition, but also upon nationality, climate and family. There seems to be a certain size for each individual, which his body will strive desperately to reach even under the most unfavorable conditions, but which it is not likely to exceed under any circumstances. In this struggle,

Relation of size to food.

disease or insufficient food before the age of six has the most permanently bad effects. After that time, any drawbacks will retard growth temporarily, but will be followed by an unusually rapid growth. A child who has had good health up to the sixth year has an excellent start in life.

Bowditch's Tenth Report seems to show conclusively that children of the poorer classes are lighter and shorter than those of the well-to-do, though the differences are small. All observers find that the professional classes are, at any given age, taller and heavier than the laboring classes. This is true in England, Germany, Denmark and Sweden.

The rate of growth, however, does not seem to be markedly different; that is, the poor child grows as rapidly as the rich, but is shorter and lighter to begin with. This seems to indicate that the embryonic and early conditions of nutrition are the most important for absolute weights and heights.

Exactly what importance should be assigned in growth to food, race and climate, is still unsettled. Americans are taller and heavier than other nationalities, but this is not due exclusively to race, for an Irish-American or German-American recruit is taller and heavier than his brother in the old country. Food and climate evidently have considerable influence here.

Relation of size to mental ability.

It is significant that idiots and imbeciles are always shorter and lighter than normal persons; but on the other hand, we must not forget that men of talent, if not of genius, are not infrequently small. We can not maintain that men below a given height and weight are stupid, any more than we can hold that size has no relation whatever to

mental ability. The case should probably be stated thus: Any child who falls much below the size of other members of his family at the same age, is also likely to fall below them in intelligence. A more direct relation between mind and body is given in bodily control, which we shall consider later.

Periods of growth and education.

In view of the well marked rhythms of growth, the question at once arises as to their bearing upon education. Should the child, while growing rapidly, have more or less school work? Should we stimulate him or quiet him? The most diverse answers have been given to these questions. The chief conflict has raged about the proper treatment of the adolescent boy and girl. We find some physicians declaring that girls from twelve to fourteen years old, should be taken out of school entirely and boys from fourteen to sixteen years old given much less mental work to do. Many educators, on the other hand, claim that this is the time when permanent interests in all subjects must be established. The child now lives in a new world—one of ideals—and we must introduce him as speedily as may be to the best in literature, history, science, art, music, religion and everything that goes to make up our complex life.

Relation of age to disease.

We may perhaps untangle a few of the threads from this knotted skein by comparing the periods of greatest susceptibility to disease with those of adolescence. Dr. E. M. Hartwell of Boston has made tables based on the mortality returns of Boston for 1875, 1885 and 1890. He finds that specific life-intensity, that is, ability to resist disease, varies as follows:

Age	Per Cent of Increase in Weight		Specific Life-Intensity		Per Cent of Increase in Height	
	Girls	Boys	Girls	Boys	Girls	Boys
5– 6	4.00	5.20	60 08	67.3	8.88	10.24
6– 7	4.08	4.58	69.5	74 5	9.69	8.78
7– 8	4.58	4.38	103.8	106.8	8.83	9.86
8– 9	3.72	4.03	123.2	164.0	10.68	9.79
9–10	3.98	4.04	195.4	134.8	9.26	10.40
10–11	4.06	3.12	191.2	209.3	10.24	7.43
11–12	4.56	3.39	309.0	233.2	13.78	9.74
12–13	4.08	3.78	232.0	290.1	13.23	10 31
13–14	3.11	4.68	162.0	238.7	10.94	11.66
14–15	1.90	4.01	171.3	250.1	7.83	13.02
15–16	.77	4.36	169.3	188.1	5.61	12.96

According to this table, girls from 11 to 12 years old and boys from 12 to 13 years old are better able to resist disease than at any other time, although the increase in power of resistance is not so marked with boys as with girls. The entire period from 9 to 13 for girls and from 10 to 15 for boys is the time of greatest resistance to disease, while the period after 13 for girls and 15 for boys is one of less power of resistance than the years immediately preceding. To state it in other terms, the period immediately preceding adolescence is the healthiest time of life; while adolescence itself falls short of this period but exceeds the period before the ninth year.

Other statistics, on the other hand, seem to indicate that the maximum resistance to disease comes somewhat later, when the boy or girl has practically finished growing in height and is making great gains in weight. This would seem to argue that the adolescent can endure a reasonable amount of work without harm.

We need, however, more statistics which shall correlate in the same children increase in height, weight and resistance to disease, before we can safely draw conclusions.

Throughout this account we have given only averages; we have been able to say only "between certain ages," or "at about this age;" that is, the order of growth is nearly the same for all children, but any particular child may be more or less advanced than another at the same age. One child of nine years may be like another of seven, or like another of eleven. Each parent and each teacher must find out how much the children for whom he is responsible vary from the average, and modify his treatment of them accordingly. We should be at least as careful to fit a child with *mental* garments as we are to provide proper clothing for his body. The system of grades in school is well calculated to turn out children all of the same pattern, regardless of their natural variations, and so each parent should be especially careful to see that the individual mental needs of his own children are provided for.

Necessity of individual study.

In conclusion: In the newborn child, all the elements of the future man are present in germ, but education decides which factors are to grow and which are to atrophy. In the first years of life growth of all parts of the body is far more rapid than at any other time, and educational, that is, environmental influences, are most potent. There are at least two well-marked periods of growth in height and in weight with both boys and girls, of which the first is connected with the second dentition and the second with the setting in of puberty. In-

Conclusion.

crease in height precedes increase in weight, and increase in weight is accompanied by increased resistance to disease, and is probably the time when mental work can be done to the best advantage. Size and mental ability have, not a direct, but an indirect relation to each other, varying with the family, climate and food. Any given child must be studied not only in comparison with other children of the same age, but also in comparison especially with others of his own family. We need not only general laws for all children, but also for children of this or that family, just as we have laws for species of flowers in addition to those for the genera.

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CHAPTER III

Abnormal Bodily Conditions

SINCE the connection between the sound mind and the sound body is as close as the last chapters have shown, it is of great importance for all who have charge of children to know some of the more common symptoms of disease. Examinations, made in recent years, of the eyes and ears of school children show that to a most appalling degree parents and teachers have considered children stupid, obstinate, and bad who are only partially deaf or blind. In the minds of physicians there can be little doubt that many other cases of supposed innate wickedness or laziness are in reality cases of some form of nervous derangement.

Introduction.

What we shall do, therefore, in this chapter is to describe some of the symptoms which should put parents on their guard and set them to watching the child in question more carefully, with a view to consulting with a physician should the doubtful symptoms persist. It should be well understood that such observations as the parent and teacher can make are only preliminary to the physician's examination, and that it is unsafe for a tyro to adopt on his own responsibility any course of treatment. The object is not to get rid of the physician, but to save children from the suffering due to the neglect of unhealthy conditions which arise from our inability to know when they exist. We

wish to sharpen our eyes to see wrong conditions so that they may be more speedily relieved.

First should be considered the senses of sight and hearing. The eye and the ear are the principal channels through which our knowledge comes, and if either of them is defective, the child is seriously hampered in all his work. He himself is not likely to know whether his eyes and ears are perfect, unless they pain him, for he is accustomed to his condition, and naturally supposes it to be like every one else's. We older people must therefore watch over him.

Special senses.

For defective eyesight, notice the position of each child when reading or writing at his seat. His eyes should be about one foot from his book or paper. If the distance varies much from this, he should be given special tests as follows:

Nearsight (myopia). Use Snellen's type test card* for this, having the child read the various lines of type at the distances indicated on the card. If he can not see them at those distances, he is shortsighted and should be taken to an oculist for more careful tests. In reading the type, one eye should be used at a time, the other being left open, but covered by a piece of cardboard.

Farsight (hyperopia). This may be roughly tested by holding a dime two feet before the eyes. If the eyes, in looking at it, turn inwards in a squint, there is probably farsight. It is sometimes supposed that a farsighted eye does not need glasses as much as a nearsighted one, because objects are plainly seen.

*This can be obtained from any dealer in optical supplies. It costs from 10 to 35 cents.

This is a mistake. The farsighted eye is under a constant strain in adjusting itself to see any object clearly, and this strain if neglected causes headache and nervousness.

Astigmatism may be tested by the radiating lines shown on Snellen's test card. If these lines look markedly different, there is some astigmatism.

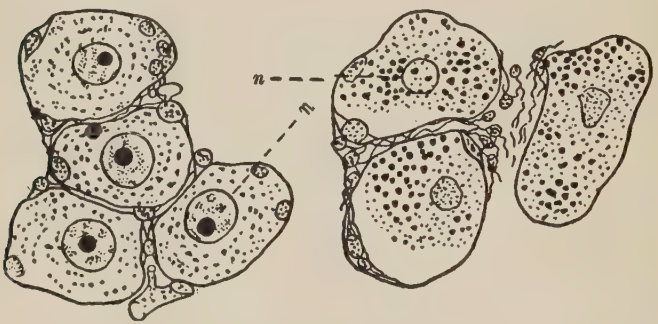

Diagram 3. Showing Change in Nerve Cells Due to Age: *A*, Spinal Ganglion Cells of a Still-Born Male Child; *B*, Same of a Man Dying at Ninety-two; *n*, Nuclei. Magnified 250 Diam. (Hodge.)

The ordinary test for hearing is given by means of a watch. First see how far a person whose hearing is normal can hear the watch that is to be used. Then test the child with his eyes closed, in a quiet room. We may suspect deafness if a child seems dull or inattentive, and constantly asks to have things repeated. Not infrequently growths form in the nose, and the tonsils enlarge, causing a deafness that is easily cured.

In all these cases, the tests are only to ascertain whether a physician's care is needed. The teacher can give a child a front seat if he is deaf, or a well-

lighted seat if his eyesight is poor, but such measures are of little use unless curative treatment is also given.

Fatigue: Its cause and significance.

When any part of the body is working, the cells of which it consists are used up; their structure is changed and new substances, some of them poisonous in nature, are formed. The nerve cells decrease in size and some of their connections with other nerve cells are temporarily broken. (See Diagrams 3 and 4.)

If work is continued, the change or tearing down of the cell goes on faster than material to rebuild it can be furnished by the blood; the waste material or poison is left in part about the cell, instead of being carried off to the excretory organs, and in small part is absorbed by other parts of the body through which the blood passes. We then have the condition known as fatigue.

It is evident that fatigue must follow as the result of use of any part of the body, and as exercise is one of the conditions of growth, it is also evident that fatigue is not, by itself, an unhealthy condition. When it sets in, we know that our expenditure is beginning to exceed our income, and while we may borrow and live for a time on our reserve in the bank of health, it behooves us to not overdraw. No disease is so difficult to recover from entirely as nervous exhaustion.

Diagram 4. Showing Change in the Nucleus of a Frog's Nerve Cell During Seven Hours Continuous Electrical Stimulation. (Hodge.)

Conditions of fatigue.

The amount of work which causes fatigue has been the subject of careful experiment, so far as fatigue of the muscles is concerned, and of widespread, though not so scientific, observations on mental fatigue. It has been found that in the exercise of any muscle fatigue begins to show after ten or fifteen seconds in a lowering of the rate of movement. After ten or fifteen minutes, the reduction is considerable, but is slower afterwards. There is also a phenomenon comparable to the second wind in running. A muscle can be exercised to the point where the utmost effort of the will is hardly enough to raise the rate perceptibly. If, nevertheless, one continues to move it as much as is possible, it will, after a short time, recover in part its original freshness and move almost as rapidly and as easily as at first. This will happen ten or fifteen times before permanent fatigue ensues.

It is still open to question how far exercise of any one set of muscles wearies the entire body. It does so to some extent, doubtless, because the poisons given off by the muscles in use are taken up by the blood and partially absorbed by those parts of the body through which the blood passes. It seems likely that exercise of the right hand wearies the left hand to some degree. Many insist that the left side of the body is more developed than it would be as the result of its own exercise, and that this is due to the reaction upon it of the exercise of the right side.

In mental fatigue, as in physical, the immediate condition is the tearing down of the nervous structures more rapidly than they are being built up, but a great variety of causes may lead to this condition.

Prominent among them are: Overwork; too long hours of work and too much to do in those hours; excessive worry over a reasonable amount of work; wasteful methods of work; not enough work or not enough variety in it; a nervous system so much below par that it can not do even a rational amount of work.

Conditions of mental fatigue.

There has been of late years a great outcry against the public schools on the charge of overwork. It is claimed that they are fast reducing our children and youth to nervous wrecks and that this is true not only of Americans but of English and Germans as well. The nervousness of children increases in direct ratio to the number of years that they are in school. Their weight and appetite diminish from the beginning of the school year to the end, especially just before examinations. They have nightmares, grinding of the teeth and tremors even where they have no well-defined nervous disease.

Overwork in the public schools.

All these things seem to many physicians the direct result of too much study. In many schools, children even as young as nine years are expected to do some home study, and from that age on the amount of it increases constantly.

On the other hand, the demand is constantly made by superintendents and parents that this or that new study shall be introduced into school. The trades-unions want manual training; the mothers want music and drawing; the colleges demand languages and science. And yet children leave school with the merest smattering of each subject and without knowing how to write a letter correctly. Is the rising generation stupid that it gets nervous exhaustion in learning nothing?

This leads directly to the claim made by many observant parents and teachers that the undeniably bad nervous condition of many children is not so much due to the amount that they are expected to learn as to the conditions under which they work. These bad conditions may be either physical or mental. Under mental conditions must be included such things as Fear—fear of the teacher's displeasure and of not passing examinations—and Rivalries—the intense desire for good marks, the consequent worry over inability to prepare a lesson, and the intense chagrin at failures in recitation or examination. Such conditions are thoroughly artificial and the combined efforts of teachers and parents should be directed towards removing them. Children should feel that they are in school primarily to learn, not to show off, and that a confession of ignorance after an honest attempt to get knowledge is not a disgrace. A give and take among the pupils in helping each other can also be established in any school and family, to replace the rivalries and fears of the other system and to remove one of the great sources of worry.

Overworry, not overwork.

Not uncommonly we find that a child who seems to be up to the average in brightness takes two or three times as long to prepare a lesson as another child. This may be due to bad nervous conditions, which we shall consider soon, or to ignorance of how to study. In the latter case, we find that the eyes are constantly wandering from the book, and that there are frequent lapses into day dreams. Even when there is a fair amount of interest in the subject of study, there seems to be an inability to think about one thing for more

Wasteful methods of study.

than a few minutes. The best thing to do with such a child is to study with him for a time, showing him how to look for important points and how to connect them with other things that he knows. Under our present school conditions, this is especially the work of the parents. Under ideal conditions, it might be the work of the teacher, but now she has no time in her day when such work can be done.

Monotony of work.

Certain patient German observers experimented upon school children by giving them columns of figures to add for two hours, or copying to do for the same length of time. They found such an appalling increase in the number of mistakes made by the end of the second hour that they forthwith concluded that our schools should all be closed or in ten years no children would be left alive. However, they made the fundamental mistake of supposing that two hours made up of a variety of subjects would be as fatiguing as two hours of one subject. As a matter of fact, variety, while not a complete rest, is a partial rest, and should be carefully observed in making out a school program or in planning a day's work for a child. It is believed that the best hours of work are from nine to eleven; the next best from three to four; and the poorest from eleven to twelve. If we considered this in connection with the requirement of variety, we should have a day's program in which the most difficult subjects were put from nine to eleven; from eleven to twelve an hour should be given to subjects much less taxing, like drawing, which also gives some of the relief of handwork after the hard mental work. In the afternoon, the order would be reversed, the easy subjects first, and the more difficult ones later.

In the demand for variety we find still another argument for handwork, drawing, and music. If any part of the body is left unused for any length of time, there is an irritability, a cry for exercise from the neglected organ. If only one or a few parts of the brain are used, they are over-exercised and other parts are not exercised enough. The result is excessive weariness on one side, and an almost uncontrollable desire for activity on the other. A child brought up in but one line of thought and action is nearly sure to go to extremes in other directions as soon as the external repression is removed. To get a balanced, controlled character, we must cultivate a variety of interests in thought and in action.

Finally, lack of interest is perhaps the most powerful single factor in producing mental fatigue. The horrible weariness, the indescribable sense of imprisonment to which a child is subjected who is forced to a study which he does not like, is something that we grown-ups will not ourselves endure at all. While I do not think that the school should be a caterer to the passing fancies of its pupils, I do believe that a better arrangement of our curriculum, and wiser and more individual methods of teaching would reveal many interests in children which now we do not suspect them of having. A closer connection of the school with the life of the home and the village or city and a stronger appeal to the children's love of doing would accomplish much.

Interest.

It seems probable, then, upon consideration of the various causes of mental fatigue, that if the conditions for work were improved by removing causes for worry,

by inculcating correct habits of study and by arranging the curriculum so that it should appeal to natural, permanent, and valuable interests, fatigue would not be as prevalent among school children as it now is. This is true in schools where these changes have been made, and in less time, more work is done with more lasting effects than under other conditions. The plea that we should make, therefore, is not for a shorter school day, but for a different one—one full of interesting work and free from worries.

Besides these bad mental conditions, there are certain physical causes of fatigue which are easily remedied and yet are commonly neglected. The first of these is bad air both at home and at school. Why is it that the American, even the well-educated American, is so insensitive to the need of pure air? Is it because he breathes badly and has his sense of smell dulled by catarrh? There must be some other explanation than that of ignorance, for the air even of most homes is not pure, and it is rare indeed to go into a schoolroom where the air is not impure. Many a sensible, well-educated man and woman goes to bed night after night with closed doors and windows, and many a house-keeper, exemplary in other respects, never feels the need of throwing the house open to the air and sun.

Physical causes of mental fatigue.
1. Bad air.

The simplest test for pure air is that the air in a room shall smell fresh upon coming in from outdoors. Even in winter time this is easy to secure. Have boards about four inches wide fitted into the bottom of the window casings, and let the windows rest on them instead of closing down. This secures a current of air

at the top, between the two sashes, and ventilates an ordinary living or sleeping room. There is usually no reason why a window should not be open an inch or two in a bed-room at night, even in the coldest weather; but if that demands too much courage, at least the door can be open and a window in some other part of the house opened to lead to a circulation of the air.

In the schoolroom there is usually an inadequate system of ventilation. Architects do not consider, in their estimate of the necessary supply of air, the amount that is befouled by the bodies and clothes of the pupils. They consider only the nice, clean, healthy child, who is, in the city at any rate, the exception. As a result, the air in most schools is heavy from the first half hour after school opens to the end of the day. Then the janitor locks in the bad air to be used again the next morning.

Supplement this defective ventilation by opening windows at every recess and noon, and see to it that the room is thoroughly aired at night. If the room is made too cold for the pupils by this constant airing, warm them by some vigorous gymnastics, and particularly by breathing exercises. The fresh, invigorating oxygen will soon reconcile them to the slightly lowered temperature.

The great importance of the air supply lies in the fact that air that has once been breathed is deficient in oxygen, which is one of the most important constituents in building up nervous and muscular tissue. A person who breathes impure air five or six hours a day soon feels dull all the time. He can not think clearly or rapidly because the brain-centers are not properly fed, and his stupidity may become permanent. His

resistance to disease is lessened and he is subject to headaches and numerous minor evils. Therefore in order to ward off fatigue and its consequent nervous conditions, cultivate in children deep breathing and its accompanying love of pure air.

Habitual postures are now recognized as the cause of much fatigue and even of actual disease, particularly of various forms of curvature of the spine. Twenty to thirty per cent of high-school children have curvatures of the spine as the result of improperly made seats.

2. Bad seats.

The most healthy posture in standing and sitting is, presumably, the symmetrical one, in which both halves of the body have the same position, because then the muscles on the two sides will be used alike, and all strain will be equally distributed. Variations from such a position should be compensated by the two sides alternating in the unsymmetrical position.

The best position in lying is still a matter of dispute. Some maintain that the symmetrical position here also is the best, the person lying either on back or abdomen. Others claim that lying on the back keeps the spinal cord unduly heated and irritable, while lying on the abdomen compresses both stomach and lungs. They therefore advocate a position on either the right or left side. The truth of the case probably is that the best position for each individual will depend somewhat upon his bodily characteristics. There can be no question, however, but that lying on the back or abdomen allows the most complete muscular relaxation, and it seems doubtful whether there is any real harm done to spinal cord, or stomach, or lungs, provided they were in good condition at the start.

Practically all physicians agree that in order to be both comfortably and correctly seated, there must be certain relations between the size and shape of the seat and the person. The height of the seat should be the same as the length of the leg, measured from the under side of the bent knee to the sole; the depth from front to back of the seat should be only enough so that the entire back can rest against it, and the seat-back should follow the curves of the spine. If the seat is too high, there is constant strain in the attempt to keep the feet on the floor, and a strong tendency to slip forward in the chair and sit on the end of the spine. This alone may lead to tenderness of the spinal cord and consequent nervousness. If the seat is too long from front to back, the same thing occurs.

The desk should be of such a height that when the elbow rests at the side, bent at right angles, it can lie on top of the desk. The desk should slope one inch in six, and should overlap the seat by at least two inches. If the desk is higher than this, it raises the elbow and brings a needless strain upon the back muscles. If it is too far in front of the seat, the child is obliged to perch on the seat-edge in order to write, and all the back muscles are severely strained. He should be able to write while leaning back in the chair.

These requirements are the same for both children and adults, but are of especial importance for children, because the body is more plastic, and more easily changed in shape, and because children become fatigued more easily than their elders.

Such seats as these here described should be secured for all schools. If possible, they should be adjustable, so that each child can be fitted to a seat. Where that

expense is too great, each room should have at least a few adjustable seats, so that the unusually large and small pupils can be suited. This is better than having no fitting whatever of the seat to the pupil.

In discussing the causes of fatigue before the signs by which we may know it, we may seem to have put the cart before the horse, but the transition from healthy fatigue to over-fatigue, nervousness, and nervous exhaustion is so gradual that it seems better to discuss them together.

Signs of fatigue.

Any person who lives with children at all knows the first signs of fatigue. A child becomes inattentive and fidgety. Ideas not related to the lesson keep coming into his mind and he can with difficulty give even outward attention, because his muscles are tired and demand constant movements to ease them. If a five-minute recess is given at this point, there will be a noticeable recovery of attention and of control of the body. On this account, more advantage is gained from a short recess every hour than from one long recess midway in the session.

If, on the other hand, work is persisted in without a rest, a child becomes more inattentive, fidgety, and irritable, and less sensitive. Careful tests show that a weary person's skin is not as sensitive to touch, and that his eye cannot distinguish colors as well as when he is fresh. The tired person has not as good a hand-grip or muscular control as the rested one. This shows in the schoolroom when the tired child is duller in recitation and more awkward and untidy in moving about the room, in writing, etc., than at other times. Such a child is also more likely to be impertinent and undisciplined than when rested and "fit." A good night's

rest and plenty of the right sort of food should restore the normal energy.

If even now he has no chance to rest, other symptoms appear. He may have trouble in remembering the names of familiar persons and objects. He is almost sure to forget quickly what he has learned. He is likely to be very irritable and to pass quickly from the gayest to the most sorrowful mood. He will probably have bad dreams and sleep uneasily. On the motor side, he will be even more fidgety than at first. Certain movements, such as swinging the foot or twitching the fingers will be kept up incessantly. The facial expression will become exaggerated—the eyebrows twitching, the forehead set in a frown, the lips compressed, the nostrils dilated. The whole body will be in a tense condition even when the child is doing nothing or is asleep.

Such a child is decidedly nervous, although he may not as yet have any nervous disease. He must be carefully watched and relieved from worry and fear, but kept pleasantly occupied. Every effort should be used to build up bone, muscle and fat. Stimulating foods, and coffee, tea, and chocolate, should be avoided. Long hours of sleep should be secured. Such sensitive children are at once the promise and the danger of the next generation. They may degenerate into hysterical wrecks, or become the leaders of society.

Signs of nervous disease.

When actual disease begins, the symptoms already described become still more pronounced. On the mental side they are not likely to be evident unless the parents have the complete confidence of their child. Groundless fears, hallucinations, forgetfulness, and all sorts of vague,

uncomfortable feelings that make him cross without his knowing why, constitute the sad inner life of the child who is becoming nervously exhausted. His body may feel numb and lame, or may be very sensitive and sore to the touch. In either case there are usually skin eruptions, especially on the chest, back and arms. There will be either excessive perspiration or dryness of the skin. There will also be twitching of the muscles or even convulsions.

A child who has any of these symptoms well marked and permanent, should be put under the care of a physician at once, and parents should carefully watch a nervous child to prevent such a condition from arising. It comes on so gradually and insidiously that neither child nor parents are likely to appreciate the change. It is, however, of the utmost importance that treatment be begun early, for if genuine nervous exhaustion occurs, it is doubtful whether entire recovery is possible.

Peculiar and exceptional children.

In the conditions so far discussed, we have considered only children who, although fatigued, nervous or nervously exhausted, still might, under proper treatment, be made well-balanced, normal members of society. There is, however, a large class of children who, owing usually to some inherent nervous defect, stand on the borderland between the abnormal and the normal, with certain tendencies toward the abnormal. It is very difficult to classify such children, but most of them seem to tend toward one of three groups: (1) The eccentric person or crank, who has a marked individuality, without being original or inventive, and who may become insane in later life; (2) the idiot or imbecile;

(3) the criminal. Notice that I say only that the child seems to tend toward one of these groups. How much education can do toward correcting such tendencies is a matter that civilized nations are only just beginning to consider.

Doubtless it seems surprising to place the criminal with the other two classes. Further investigation may change the classification, but as our knowledge stands now, there are certain physical conditions common to all. Adults of these classes and children who show such tendencies are, as a rule, below the average in height and weight. They are likely to have some marked bodily asymmetry or defect, such as a high palate or a misshapen head. They frequently have some serious nervous trouble, hallucinations, epileptic attacks, convulsions, or some other form of disease showing nervous instability. They are unlikely to resemble others of their own family, and they in turn will have few if any children. They seem to be, in short, deviations from the normal in most respects, deviations which, by their own defects, will die out in the course of a few generations.

It is impossible to explain in detail what conditions produce these exceptional classes. Most physicians agree that there is some nervous heredity, but beyond this there is wide divergence of opinion. Whether such heredity will lead to a genius, an imbecile or a criminal, no one can foretell. It is not uncommon to find two of the three types in one family.

We can, however, say certainly that the children of nervous parents will themselves be nervous, and the more so if the parents, especially the father, are old. If such children turn out to be exceptional, parents

and teacher have one of the most serious problems on their hands, for as the child contains great possibilities for good or evil, so does he need especial care.

We need not reiterate the importance of good food, good air, and exercise for such a child. Just in proportion as he is unusual, does he need more care taken of his body. His unstable, easily-overturned nervous system ought to have all the nutrition possible without stimulation.

Treatment of the exceptional child.

For such a child, however, the most troublesome question is how to treat him at home and at school. He is always doing unusual or bad things. He does not get along well with other children. Perhaps he hates school, and he shows all sorts of traits that make him the despair of all who have to deal with him.

We can do nothing whatever with such a child until, with the utmost patience and sympathy, we learn to put ourselves in his place, to look at things from his standpoint, and to see how, from that standpoint, his actions and feelings appear justifiable. This is, of course, true in dealing with any children, but the difficulty in doing it is not usually so great as with the peculiar child. To put ourselves in his place, we must get his confidence, and at the same time do some unobserved observing and experimenting, to find out his real interests and make use of them to bring him into closer relations with other people. In every way such a child should be led to feel that he is a valued and needed member of society and that his greatest happiness is in serving others. The criminal is avowedly anti-social; the genius is too often solitary, if he is not in open opposition to his time. Children with such tendencies, need, therefore, not to be marked

out and set apart from their little world, but rather to be bound to it by infinite ties of service and affection. Nothing will help an unbalanced person to keep his self-control so much as the knowledge that he has duties and obligations, provided that the service be not so strenuous as to become a source of worry.

The degenerate.

But there is still a sad remnant of children who, with our present knowledge, are uneducable, or educable only to a small degree. They are of all grades from the child who is only stupid, and can do the regular school work by having more time than the other children, through the various classes of the feeble-minded and imbecile, to the idiot who, a mere animal, can not be taught the simplest acts in caring for himself. For such children we feel more and more the need of special schools and special methods of instruction. In some of our public schools, they are now assigned a special room and teacher, and this should always be done.

Another class of degenerates consists of those whose criminal tendencies can not be corrected. It is difficult for the optimist to believe in the existence of hereditary criminals, and it is possible that with more knowledge of the proper conditions for his life, the so-called hereditary criminal may be made a good member of society. But under present conditions, it is too true that certain children conceived in wickedness and born into sin are beyond our reach by the time they are ten or eleven years of age.

As the causes of degeneracy are studied, more and more do we realize how the sin or defect of the parents is "visited upon the children even unto the third and fourth generation." Like begets, not like, but

similar. The parent with any form of nervous defect passes it on, but in the child it may assume almost any other form. For example, statistics on the children of parents one or both of whom were congenitally deaf, show that of their children, a much higher per cent than normal were, not deaf, but imbecile, epileptic, and criminal. The children of drunkards may be, not drunkards, but imbeciles, criminals or epileptics. Between 60 per cent and 80 per cent of criminals have drunkards for one or both parents.

Causes of degeneracy.

It is also the case that mere neurotic temperament in the parents predisposes the child to some form of degeneracy. The defect of the parent, whether due to voluntary causes or not, is visited upon the child, and if handed down by the children, is at last punished by utter sterility in that family. The criminal, if left to breed only with his own kind, would die out in a few generations, but he is constantly recruited from the borderland of the occasional criminal.

Can there be a stronger argument for building up healthy bodies in ourselves and in our children than the knowledge of the close connection between crime and disease? From this standpoint, it is no slight matter to teach a nervous child perfectly regular bodily habits, and to cultivate in him what might be called a cosmopolitan appetite for all healthy foods.

While it is not justifiable for any parent or teacher to be ignorant of the greater perils and temptations that face the child of nervous temperament than face the phlegmatic child, neither must they forget that under proper care such a child may become a most valuable member of society. The very instability of the nervous system

The hopeful outlook.

that makes him so easily the victim of liquor or vice in any form, also makes it easy for him to adopt new lines of action and thought, that is, makes him less the slave of habit than other people are. Such a person, when led by high principles and love of the service of his fellows, becomes the hero and leader of his generation. His vagrant, unlawful impulses must in his childhood be given the balance wheel of a noble ideal, and then we may expect almost any good of him.

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CHAPTER IV

Feelings and Ideas of Sex

(If the class is mixed, or is very immature, the teacher may find it wisest to omit class discussion of this subject. It is one, however, which particularly concerns mothers, and a careful consideration and discussion of the points made here is urged upon them. The evils here described seem to be more widely spread than many of us think.)

EACH member of the class should write out reminiscences on the following points and give them to the teacher, to illustrate the various points mentioned in the chapter. No names need be signed to these papers, but the sex should be indicated.

Observations.

1. What was your first idea of "where the baby came from?"
   (1) From whom did you get it?
   (2) If false, when and why did you become suspicious of the truth?

2. Have you any recollection of any person ever trying to teach you self-abuse? If so, was this person a servant, another adult, or a child companion? Of the same or opposite sex?

3. If you were instructed by your mother about the reproductive functions, what was your feeling about them when they first appeared?

4. If not,
   (1) What was your feeling when they first appeared?
   (2) Have you since then come to talk with her about such subjects?

(3) Do you feel that she wronged you by leaving you ignorant?

(4) Did you neglect to care for yourself or meet harm in any way through your ignorance?

5. Have you yourself ever answered any of the advertisements on this subject, or do you know anyone who has?

(1) What was your feeling toward the "Doctor"?

(2) Were you seriously alarmed about yourself?

(3) How long did you continue treatment?

(4) How much money did you pay for medicine and advice?

6. If you have from childhood talked over this subject with your mother, write a brief sketch of your feelings about it as a child and as an adolescent, and especially, if you can, compare your feelings with those of some one who was left ignorant.

Vagueness of the first sex feelings.

Every organ of the body contributes its quota to our general bodily feeling and affects our state of mind, although we are not usually able to single out each constituent and trace it to its source. We can not doubt that the reproductive organs add their mite to this fund of common feeling, for it is impossible that any healthy organ should exist without acting and reacting upon the rest of the body. Still, such feelings are very vague in the baby and in the child. Children are as ignorant of the source of such feelings as they are of all the other vague comforts and discomforts that make them contented or cross. We all know that modesty is not an instinctive thing, but has to be taught to the little

child. On account of this vagueness, we often assume that children, up to the age of adolescence, are practically sexless. It is doubtless true that sex characteristics are much less marked before puberty than they are later, but nevertheless there are differences which lead to characteristic reactions for each sex. The careful observation of these differences is one of the things that is still to be done in Child-Study.

As puberty approaches, marked changes occur in the body and in the accompanying feelings.

1. Physical. On the physical side we find:
   (1) There is great increase in blood pressure. In the child, the ratio of the heart to the arteries is as 25: 20; just before puberty, as 140: 50; and at maturity, 290: 61. That is, in addition to the rapid growth of heart and arteries at puberty, there is nearly three times as much blood pressure.
   (2) The number of red corpuscles in the blood is increased. The boy or girl of this age should not, therefore, have any tendency to anemia.
   (3) There are usually rapid chemical changes all over the body, as is shown by a slightly increased temperature.
   (4) There is probably a rapid growth of association fibers in the brain.
   (5) There is the characteristic change of voice for both boys and girls.
   (6) There is a rapid growth of the entire body.
   (7) Often there is a decided change of features, which brings out family resemblances that before were unnoticed.

(8) The sense of touch becomes more keen, and probably the other senses do also.

(9) In addition to these changes common to both boys and girls, there are the changes peculiar to each sex as the reproductive organs approach maturity.

2. Mental. On the mental side, the changes are no less marked. There is a general mental restlessness which manifests itself most markedly in a rebellion against authority. Parental restraints which up to now have been endured, even though not markedly beneficial, become the occasion of defiance, and if persisted in, too often result in a sundering of all confidences between parent and child.

Closely connected with this mental restlessness is the desire to lead. Ambition arises and manifests itself in numerous directions—in the organizing of societies, in extreme devotion to studies, or, on the other hand, to the social life of the school. Ideals hold strong sway over the youthful mind. The attempt to reform the world begins. The social nature, especially the moral and religious self, awakens to a new activity, and there is also in many cases the beginning of a genuine love for nature.

It is hardly too much to say, indeed, that all of the permanent interests of the man have their origin or become greatly emphasized at this age. Or, to put it negatively, if any given interest is lacking at this age, it is very unlikely to exist in the mature man or woman.

So far we have discussed this matter from the adult's standpoint, but now let us put ourselves into the place of the child, and see what his uninstructed thoughts

and feelings about sex matters are. As we have already seen, the baby and the child have only the vaguest of sex feelings, and ask no questions about them. Every child, however, is practically certain to have his curiosity aroused as to where the new brother comes from. He comes to his mother or to the nearest grown person with questions about these things just as he goes to her with questions about everything else, for these wise elders know everything and are usually willing to enlighten his ignorance. At the start he does not have anything more than the healthy curiosity which he has on all subjects, and whether he keeps a normal, sane attitude or is forced into an unhealthy one, depends upon the sort of answer that he gets to his first questions.

The child's own feelings.

These answers may, most of them, be put under two heads. There is (1) the "Hush! Hush!" answer. Not infrequently a child is told that he ought to be ashamed of asking such questions, for nice children never talk about such things. He is made to feel that in some mysterious way he has done wrong, but his curiosity is left unsatisfied and yet is stimulated by the appearance of new brothers and sisters for his playmates or himself, and by the casual remarks dropped by his elders.

Treatment of the child.

(2) The fairy-tale answer. It may be that, instead of rebuking the little questioner, the mother receives him kindly, and tells him elaborate tales of how an angel brought the new baby down from heaven; or she may prefer the stork or the cabbage-leaf as her *deus-ex-machina*. She flatters herself that thus she keeps the confidence of her child while still not telling him truths of which she is herself half ashamed.

The final outcome is much the same in both cases. Both the child who is hushed and the child who is given the myth, get their knowledge of the facts from other sources. It is obtained from nurse-girls, servants, or other children, and is usually so told and so garbled as to make the children still more secret and ashamed. Obscene pictures, with their meaning obscurely hinted at by older children, furnish more material for the imagination, and so, by degrees, an exciting and perverted picture of sex differences and the meaning of those differences is formed

Effect upon the child.

Children thus get the idea that there is something shameful about the facts of sex. They conceal their thoughts from their parents and carry them through life or until they chance to read some rational book upon the subject. The horrible and grotesque ideas which children form when thus left to themselves can not be described. And yet, dreadful as they seem to the well-informed person, we must remember that they are the child's attempt to explain a most difficult subject. Any blame for such ideas should attach to the parents who leave the child ignorant, and not to the child.

If children who are thus left uninstructed escape with only the excitation of *thought*, many investigators would consider them fortunate rather than otherwise. Incorrect thoughts and excited imaginations are bad enough, out are not so immediately dangerous as the forming of bad sexual habits, which may end not only in the loss of sexual power, but in nervous weakness and imbecility.

At first thought, many people will say that children who learn such habits must be naturally depraved, but

a closer examination of the facts shows that this is too sweeping an assertion. Doubtless some children do inherit passionate natures and are easily led astray, but even the best child has a sex-nature and may be taught to do wrong.

Necessity of guarding the child.

Most physicians will bear witness that the danger here is not an imaginary one, and Havelock Ellis's investigations also show that an alarmingly large proportion of men and women have at some time in their lives been given to self-abuse, and that in most cases they acquired the habit when children, without any knowledge of its harmful nature. Vicious servant-girls employ it upon children, to put them to sleep, and teach the children to quiet themselves in this way. The habit is thus sometimes acquired by babies of less than a year, and, once acquired, is as difficult to break off as the drink habit. The child can not go to sleep without the accustomed stimulus, while with it he becomes sickly and dull.

What is true of the baby is just as true of the little child. He must be guarded from evil-minded servants and children, and from his own ignorance. The only safe way to guard him is to make him feel that his mother knows more about this matter than any one else, and will tell him about it.

The same thing holds with far more emphasis for the adolescent. With all the other changes that occur at adolescence, there comes also a great increase in the sexual feelings, for which the rapid growth of the sexual organs is responsible. It is simply nonsensical to suppose that the adolescent boy or girl has any instinctive knowledge of what these feelings mean.

We all grant that, as soon as it is said. It follows then, that if they are left ignorant, they will either get information from some one other than their mother, or that they will not know how to meet the new conditions which confront them. If false explanations are given, or if they are left to make up explanations for themselves, they may do themselves serious harm, besides being very unhappy.

Many adolescent boys and girls imagine that they have some fatal and shameful disease, and from these the quack doctors, who publish the lurid advertisements about lost manhood and delicate womanhood, make their enormous profits. Perfectly healthy boys and girls, who do not understand the new phenomena of adolescence, read these advertisements, find that they have most of the symptoms described—which are normal—become alarmed about themselves, and write secretly to the philanthropist who is so desirous of aiding suffering humanity. The "Doctor" finds that they are in a dangerous condition but can be cured by his medicine, which he accordingly sends them, extorting money for it and his advice until he can get no more.

Danger from quack doctors.

Mr. Lancaster's investigations show that this evil is widespread, and put the question of its existence beyond the shadow of a doubt.

Now, it is easy for each father and mother to say, "Well, those are dreadful facts, and I have no doubt that they are true, but I am sure that my child will never have such experiences." How can you be sure if you have never mentioned such subjects to your child? The very boy or girl who blushes so painfully if you but skirt the

Necessity of instruction.

subject, may but be imitating your own attitude toward him, and may under other conditions inquire into it in anything but a shame-faced way.

Furthermore, we must remember that most of these children fall into the danger innocently, and that the very secrecy with which we surround the matter makes it impossible for us to know of the danger until it has actually come upon them.

The only safe way, and the only justifiable way, is to have openness between parents and children. Modesty becomes prudishness and is carried to an inexcusable extreme when it leaves boys and girls to grow up ignorant of one of the most important facts of life, and one which has such tremendous bearings, whether we will or no, upon each individual.

The question then arises what information we shall give, and when, and how. We can not lay down many general rules, for the success with which the information is given depends upon knowing the particular child concerned and seizing the right opportunity. There are, however, some practical suggestions which may be given.

From the standpoint of morality as well as from that of health, it is important to keep the sexual organs in good condition. Any unhealthy organ causes pain, or at least irritation, and directs attention to that part of the body. Therefore, the healthier the reproductive organs, the less will they obtrude themselves unnecessarily upon the mind, and this we all know to be highly desirable. It goes without saying, therefore, that if there is any persistent pain or irritation the advice of a physician should be sought.

Sex hygiene.

Short of disease, there are certain simple rules to

follow. Most important and most neglected, is the observance of perfect cleanliness. There should be a thorough cleansing of these organs, if not of the entire body, at least once a day, and Marro urges that it be still more frequent, for the sake of coolness as well as cleanliness. These two agencies—coolness and cleanliness—he places as the two great preventives of irritation and of consequent sexual thoughts. As soon as children are able to bathe themselves, the especial importance of this part of the bath should be impressed upon them.

Stimulating foods, such as highly seasoned and rich deserts, and tea and coffee, should be avoided.

On the mental side, the thoughts should be directed away from sexual subjects except as one of the matter-of-course things in life, and this leads again to the importance of instructing children upon the matter. Many parents say that children should not think about such things and therefore should not be told about them. They should rather say that children should not think morbidly about such things, and so should be told about them. Children are not naturally evil-minded, but they are as curious as all the rest of us, and peer intently at the things that are left in semi-darkness, and conjure up all sorts of ideas to explain them. If now these facts are brought to the light of day, and are shown to be very general facts after all, and if the sense of secrecy and shame is replaced by a knowledge of the importance of the facts, most children will have little temptation to think of them in anything but a healthy way, and will have the best safeguard against indecent speeches and acts from any source.

The facts told must vary with the child's disposition. It is always necessary, however, that the parent should have an accurate knowledge, and should feel that the subject is essentially a noble one. The parent must feel that in giving the child such instruction, he is fulfilling one of his highest duties to society.

What information to give.

Usually the child will himself give some natural opportunity by asking questions, and the amount of information can be determined to a large extent by the questions themselves. At first a little child is generally satisfied by the amount of explanation that comes in showing how a flower forms its seeds, from which other flowers grow; but if his questions go into more details, they can certainly be answered, if we have but the wisdom, so as to have only good results. There are families—and the number is constantly increasing—in which the most beautiful relations exist between parents and offspring as the result of the mother's confidences to her children.

As adolescence approaches, this general knowledge needs to be supplemented by practical instruction as to what changes the boy or girl must expect. Much mental distress and irritability will thus be prevented, and a natural growth into manhood and womanhood secured.

Finally the young man and the young woman may be taught with a new emphasis the vast importance and the sacredness of the relations of man to woman, and enlisted upon the side of a perfect purity of thought and action. The final justification of instruction in sexual knowledge is that it shall secure a higher ideal of the relation of husband to wife and of both to their children. The "social evil" and the great defects in our

family life of to-day are directly traceable in part to ignorance of the laws of sexual health and morality. It is our duty, therefore, as good citizens as well as good parents, to train children to right ideas of their sexual selves.

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CHAPTER V

Sensation and Perception

Teachers and students who are doing systematic work in Child-Study should observe the following:

Observations.

1. *Sight.* Keep a record of these points in the baby's seeing:

(1) When was the blank stare replaced by real seeing of an object, *i.e.*, by convergence of the eyes upon the object?

(2) When did his eyes first follow a moving object? Was the object bright or large? Did he move head as well as eyes?

(3) When did he first look for an object or try to see where a sound came from?

(4) When did he first look for something that he had dropped?

(5) When did he first show a liking for some color? What was the color? Was it in a bright light?

(6) When did he first wink at the approach of some object threatening his eyes?

2. *Grasping.* When did these acts first occur?

(1) Closing of fingers over object put into the palm.

(2) Opposition of thumb and fingers in grasping.

(3) Putting hand in mouth.

(4) When did he first grasp for some object he saw?

Notice whether he reached for objects far beyond his grasp, *i. e.*, whether the hand closed to grasp

them. Babies often stretch out their arms for things that they want—such as the moon—but Baldwin claims that in such cases there is no reaching and grasping as there is when they expect to seize a tangible object. He also claims that a baby does not grasp at objects far beyond his reach, and very soon learns to correct his first slight inaccuracies in judging distances.

Teachers who wish statistics as to the ideas that children have about objects, should get G. Stanley Hall's pamphlet, *Contents of Children's Minds on Entering School* (E. L. Kellogg & Co., price 25 cents) and follow the plan outlined there. They may find another list of words more useful, but the general plan will be valuable in any case.

Introduction.

In the preceding chapters we have discussed the physical nature of the child, and have hinted at some of the relations between it and education. We shall now take up his psychical nature and endeavor to trace the growth from the rudiments in sensation and perception to the more complex manifestations in the adolescent's reasoning. Each mental process, such as memory and imagination, will be similarly treated, so that when the account is finished we shall have an accurate picture of the mental growth of children.

In this part of our subject, far more than in the description of his physical nature or of his expressions of thought, observations are lacking entirely, or few in number, or defective; but nevertheless, individual observation may still be supplemented to a considerable degree.

There has been some discussion among psychologists as to when the first pleasures and pains can be felt. In the older theories, which held more or less explicitly to the idea that even the newborn child had a fully developed mind, the question of whether the soul entered the body before or at birth, was an interesting one; but for the later psychology this has been changed to the question of when the new life is sufficiently developed to have consciousness.

The first sensations.

Compayré believes that for at least two months before birth there is a vague consciousness of pressures and jars, and perhaps of other vague comforts and discomforts. There can be no sensations of taste, smell, sight, or sound, as embryonic conditions are such as to preclude the possibility.

Preyer believes that birth itself is a discomfort to the child, as evidenced by the fact that in two cases under his observation the child began to cry when only partly born, the face at the same time expressing pain; but when a finger or a pencil was put into the child's mouth, it ceased crying and the look of pain was replaced by one of pleasure.

While there is probably a vague mass of feeling before birth, and certainly directly after, there is much less sensitiveness than there is a little later. This is because the nerve-endings in the skin are not fully developed and the connections between various parts of the brain not yet established. The newborn child responds more feebly to all kinds of stimuli than does the child a month old.

We may summarize the condition in Miss Shinn's words: "She took in with a vague comfort the gentle

light that fell on her eyes, seeing without any sort of attention or comprehension the moving blurs of darkness that varied it. She felt motions and changes; she felt the action of her own muscles, and after the first three or four days disagreeable shocks of sound now and then broke through the silence or perhaps through an unnoticed jumble of faint noises. She felt touches on her body from time to time, but without the least sense of the place of the touch; and steady, slight sensations of touch from her clothes, from arms that held her, from cushions on which she lay, poured in on her.

"From time to time sensations of hunger and thirst, and once or twice of pain, made themselves felt through all the others, and mounted till they became distressing; from time to time a feeling of heightened comfort flowed over her as hunger or thirst were satisfied; or release from clothes and the effect of the bath and rubbing on her circulation increased the net sense of well-being. . . . For the rest she lay empty-minded, neither consciously comfortable nor uncomfortable, yet on the whole pervaded with a dull sense of well-being. Of the people about her, of her mother's face, of her own existence, of desire or fear, she knew nothing. Yet this dim dream was flecked all through with the beginnings of later comparison and choice."

To trace the steps of the marvelous transformation from this animal-like little being to the wide-awake, fascinating little person of a year later is especially to trace the development of sensation and perception. Memory, imagination, and thought also begin here, but do not develop so rapidly as does perception.

It is so difficult to test a baby's sense of smell apart from taste that practically no observation of this sense has been made. Preyer cites some cases that seem to indicate some sensibility even at the first, but concludes that smell develops much less rapidly than any other sense. This is because it has very little exercise, most of the surroundings of a well-kept child being odorless.

Sensations of smell.

A number of observations have been made on newborn children who have not yet been fed, to see whether there are different instinctive reactions to sour, bitter and sweet tastes. Dilute solutions of such bitters as quinine and such sours as acetic acid were used, with varying results. While some babies made faces and rejected the substance, others sucked placidly at it. In some of the latter cases, however, when the solution was made stronger it was rejected. In all cases sweet substances were sucked.*

Sensations of taste.

Preyer concludes that while there are considerable individual differences in sensibility, there is from the start a dislike for sours and bitters and a liking for sweets. His own son showed a considerable degree of discrimination about his milk, objecting vigorously if it had not quite the usual amount of sugar in it. Most mothers find that if the baby's milk is changed there is trouble.

Any new food given to a baby or small child at first causes contortions and grimaces which we are likely to interpret as due to great disgust; but they occur even with sweet foods which the child eagerly sucks at,

*The various substances were all of the same warmth, to exclude the factor of temperature.

and seem to be expressions of astonishment rather than dislike. In many cases an incipient disgust can be overcome by manifestations of enjoyment from the child's elders, and thus likings for many hygienic foods can be formed before the child has a chance to acquire dislikes, or likings for unhygienic foods.

This ought to be done when a child is first learning to eat solid foods, for by the time he is four or five years old he has such decided likes and dislikes that he can hardly be forced to eat food that he dislikes without nausea. In such a case, while a child should not be forced to eat a food for which he has a strong dislike, we need not go to the other extreme and give him an unhygienic diet even if he calls for it. To allow a child to make a meal off meat, cheese and pie, when he refuses potato, bread, peas, and milk, is the worst possible thing for him. There are other vegetables, grains and fruits that he will eat, and these should be given him.

Then, too, it not uncommonly happens that a child takes a dislike to a food from its appearance, without ever tasting it, and all that is necessary is to exercise a little diplomacy in getting the first spoonful into his mouth. Of course sometimes he will not like it, but even then the alternative is not an unhygienic food, but another food containing the same chemical ingredients.

Practically it is a difficult thing to steer one's way between the over-indulgence of a capricious appetite, and a wise yielding to insurmountable dislikes, but it may be confidently asserted that the average American mother tends to over-indulgence rather than to the following of too hygienic laws. Little children are

given too stimulating and too monotonous a diet as a rule—too much meat and pastry and too few fruits and vegetables. This is partly due to the fact that children usually sit at the same table as their elders and clamor for the same food. The parents, unwilling to adopt a simpler diet, or unable to train the children to eat it contentedly, give them the rich food, which causes nervousness and dyspepsia. Either of the two possibilities is, however, within the reach of parents who have the strength of character to adopt it.

We should also note here the fact mentioned by Miss Shinn that thirst is present from birth and is not satisfied entirely by the baby's liquid diet. A baby will fret sometimes, not for milk, but for water, and a teaspoonful will relieve him more than an extra meal. Children also crave water more than adults do.

Hearing.

The newborn child is deaf and remains so for a period varying from half an hour to several days or even weeks. If loud sounds do not call out a response by the fourth week, however, there is reason to fear that the deafness will be permanent. Usually decided starts or tremblings are caused by a loud sound on the second or third day.

The causes of this first deafness are two: (1) The middle ear is filled with the amniotic fluid instead of with air as in the adult; (2) The walls of the auditory canal either actually adhere or are close together, thus preventing or impeding the passage of air waves to the drum of the ear. After birth, the middle ear is cleared by the fluid running out through the Eustachian tube to the throat, and air entering by the same channel, as the child swallows; the walls of the auditory canal separate, and hearing becomes more distinct.

The advantage of having the ear thus cushioned at first is evident when we consider that the tympanic membrane is more easily ruptured in children than in adults, and if it were at first exposed to sounds as it is later, it would often be broken by the impact of air waves against it. It is quite possible that children are more sensitive to sounds than adults because this membrane is more delicate.

The sensitiveness to sounds when once hearing has been established varies considerably. Compayré records that about the fourth day such slight sounds as a sneeze or a whistle caused violent responses. We should notice, however, that a child's starts or tremors when a door slams or when a loud voice speaks are often due to the jar instead of to the noise. This can easily be tested by making the sounds where none of the jar from them can reach the baby. Mrs. Hall observes this great sensitiveness to jars on the first day.

On the seventh day a loud call would not awaken Preyer's son, but on the third day Miss Shinn's niece started when some paper was torn at a distance of eight feet. By the fifth week, Preyer's boy was so sensitive that during the day he would not sleep if anyone was talking or walking in the room. On the other hand, many babies sleep tranquilly through prolonged conversations. Habit has much to do with this.

In the eighth week this same boy heard the piano, and was much pleased with the loud tones, but paid no attention to the soft ones. The various observations on sensibility to musical tones we shall consider later in connection with music.

During teething, the same boy's sensibility to sounds was increased, and after the first year most new sounds

even when very loud, like thunder, caused pleasure instead of fear.

Mrs. Hall noticed that her child distinguished different kinds of sounds before any one sound was recognized. When we consider the adult's inability to recognize absolute pitch, this is just what we should expect. Our knowledge and recognition of sounds is almost entirely a matter of their relations to each other.

Under the head of dermal senses are included the various kinds of sensations which arise from the skin. Here, as in the case of smell, we have no exact observations as to how much a baby discriminates differences of heat and cold. It seems probable that after the first bath, he feels warmth and cold, and after the first week he shows decided pleasure in a warm bath and dislike of one 1½° C. lower.

The dermal senses. 1. Temperature.

Taylor warns us that the child of two or three years has a membrane so much more sensitive than an adult's that it may be blistered by food which to an adult seems only warm. He evidences the protests of children against food and water which to us seem only agreeably heated.

Under the head of passive touch we consider only those pressure sensations in which the skin alone is involved. When the muscles also are used, as in exploring a surface or in grasping, we have active touch. As with all the other sense organs, the skin of the newborn babe is less sensitive than it is a few weeks later, because the nerve terminations are still imperfectly developed. When respiration begins, the reflexes called out by

2. Passive touch.

slapping or pinching are stronger than before, and after two or three weeks there is a markedly stronger response to a slight stimulus than at first.

Preyer found that the lips and tongue of a newborn child are the most sensitive parts of the body. Tickling the tip of the tongue before the child had ever been fed caused sucking and swallowing movements, while tickling the root caused movements of ejection.

Touching the palm of a two hours' old child causes the fingers to close about the object, and the grasp is so strong that the babe may hang suspended by his hands for half a minute—a feat many adults can not duplicate. Touching the soles also causes reflex movements, but they are slower than a week or so later.

In the discussion of this subject, we anticipate what should come in the chapter on instincts, but it is so essential to the understanding of perception that the separation is unavoidable. We shall take up here the series of movements which most assist the child in getting a knowledge of objects as distinct from each other and as holding space relations to each other.

3. Active touch.

We have already seen that Preyer found that the lips and tongue are most sensitive in passive touch, and we all know that everything goes into a baby's mouth, there to be sucked and licked Preyer attributes this to the baby's belief that all the world is milk, and that to get milk at any time all that is necessary is to put the first handy object into his mouth and suck it diligently. Miss Shinn takes issue with Preyer here and maintains that things go into the mouth on account of the pleasure that comes from contact with the sensitive lips and tongue,

Mouthing.

just as an adult gets pleasure from touching smooth, warm surfaces or from exploring the outlines of an object with the hand. Both theories are based on observations of only a few children, but Miss Shinn's seems more true than Herr Preyer's. We must, of course, except from consideration the hungry child. He wants only food. But when he is fed and warm and happy, he will still mouth eagerly at anything between his lips, and will continue to do so even though it is hard and tasteless. He shows no disappointment when no milk comes from it, but on the contrary goes over it again and again with lips and tongue. And his repeated experiences that milk flows only from the bottle do not deter him. On the contrary, long after a baby has shown in other ways that he associates definite experiences with definite objects, he continues to put things into his mouth. He would not do this if all that he wanted from them were food.

Miss Shinn also observed in her niece a stage when, to some extent, she used the mouth for grasping instead of the hand, putting her head down, like a dog, to get at the object, and protruding her lips. For some time, in getting an object into her mouth from her hand, she pushed her head down toward her hand more than she raised her hand to her mouth. For some time she would mouth over the face and dress of the person holding her, in preference to using her hands.

Even children four or five years old put things into their mouths to suck, although they know that they are not eatable, and many adults do the same. The habit of chewing gum, where there is no taste after the first few minutes, illustrates this.

In all this, there seem to be traces of the survival of an ancestral stage when man like other animals, did not use his hands for grasping, but only his mouth. The stage is, of course, rudimentary, and is not distinctly marked off from that of hand grasping, but it does seem to be present.

Hand grasping.

For lack of a better name, we call the first movements of a child's hands and arms random. Many of them are not coördinated and they seem to serve no useful end The child himself has no control over them. They are due to overflows of nervous energy, which drain off in this way.

In the first random movements the arms go helplessly here and there, striking against the surrounding objects, against the baby's own body, his face and his eyes, and now and then getting into his mouth, where they are sucked. They are especially likely to get to his mouth, because in the prenatal posture, the hands are close to the mouth, and the position is naturally assumed by a baby for some time after birth. The great enjoyment obtained from the thumb or fist, deepens the connections thus accidentally formed between the hand movement and the sucking movements, so that he soon learns to put his hand to his mouth when he pleases. By the twelfth week Mrs. Hall's baby was able to put things into his mouth or near enough to it so that the lips could feel them and draw them in. Even in the forty-third week, Preyer's boy would miss his mouth sometimes when it was open and waiting for food. In first learning these movements, the left arm often moves symmetrically with the right.

Grasping develops slowly through a number of stages as follows:

1. Reflex clasping. Two hours after birth the fingers will close over an object put into them, and within a few days a loud sound or bright light may cause a convulsive throwing up of both arms. Mrs. Hall states that at first her baby seemed unconscious of any object in his hand, but that on the fifty-seventh day the fingers closed over a small pencil-case. It seems as if her observation must be defective here, as all other observers agree that the reflex grasping occurs shortly after birth.

Reflex clasping.

2. Holding with the thumb opposed to the fingers when an object chances to be in the way of the moving hand. Mrs. Hall notes that after the seventieth day the thumb lay outside the fingers when the hand was closed, while before it had been inside. During the first three months, the thumb becomes opposed to the fingers as in an adult, so that any objects which come into contact with the hand are more firmly held. This fact, combined with the ability already gained to put the hands to the mouth, results in many objects being taken to the mouth, where the variety and pleasure of the new feelings prompt him to repeat the act.

Thumb and fingers.

Thus the thumb and fingers have learned to work together, though awkwardly, and thus connections have been established between arm movements and the pleasures of sucking the hand or the objects held in the hand. But as yet the eye does not direct the hand, and therefore the child does not reach for objects that he sees, and he does not look at objects held

by his hands. These two points and their vast importance to the child we shall consider shortly, but first we must trace the development of sight.

Five minutes after birth, when taken to a window in the twilight, Preyer's son showed some sensitiveness to the light. The eyes of a baby will close if a bright light is brought near them, and are partly closed most of the time at first. Compayré thinks that one reason why some babies are so wakeful at night is that the darkness does not fatigue their eyes as daylight does.

Sight.
1. Sensitiveness to light.

This first shrinking soon disappears, however. Within a few days the baby will turn its head toward a window or light, and within a few weeks will give various expressions of pleasure at light. The strabismus or squinting which is so marked in most newborn babies disappears by the third week, and moderately bright lights are enjoyed. The great sensitiveness to light at first is shown also by the fact that a baby's pupils are more contracted than an adult's.

The importance of shielding a baby's eyes from a glare of light is thus evident. A little baby should not lie facing a window or bright light for any length of time, any more than a child should be allowed to face them when he reads.

Observation seems to show that babies are generally shortsighted for a time, and in addition to this, their inability at first to move their eyeballs or head with any regularity limits their vision still more. The lens also does not accommodate itself to objects at first, so that any object outside of the one focal distance must be very indistinct. While a child is not born blind, therefore, his

2. Range of vision.

visual world is limited to the few feet directly in front of him, filled with indistinct blurs. By the sixth week the shortsightedness is less marked and by the eighth, accommodation of the lenses begins, both greatly enlarging the child's world.

3. Movements of eyes. The eyelids.

The first movements of the eyelids are not coördinated either with each other or with the eyeballs. One eye will be wide open when the other is half shut, and both will sometimes close while the eyes are fixed on some object. At first also they seem to be less sensitive than later, for wetting the eyelids and even the cornea, which is so sensitive in adults, will not cause the eyelids to close, in some cases until after the third month. So also at first there is no winking when an object threatens the eyes. The first appearance of winking occurs sometime between the forty-third and sixtieth days, by which time the movements of the eyelids are fairly well coördinated.

The eyeballs.

Convergence, that is, harmonious movements of the eyeballs so as to bring the points of clearest vision in both to focus upon the same object, is in as imperfect a state at birth as is everything else. Many children are born cross-eyed and remain so for months, the defect disappearing as the eyes are used and accustomed to work together.

In all children different degrees of incoördination can be observed even from the very first, for while at some times the eyes are evidently not working together, at others they appear to be. In the last case, however, closer watching usually shows that the movements are not perfectly coördinated. Compayré traces the development from incoördinate movements

to involuntary coördinated, and then to voluntary coördinated; but while this shows the logical order and the order in which the relative importance of the movements progresses, all three are found from the second week on, if Preyer's observations are correct. He notes that on the seventh day his boy's eyes followed a candle, and converged, while on the eleventh day there was unmistakable fixation of the eyes. Mrs. Hall also notes that from the second week the eyes began to rest on objects, but places the first unmistakable fixation on the twenty-first day. On the fifty-third day her child gazed at a box of rattling matches for six minutes, and on the sixty-second at a purse of jingling coins for twenty-eight minutes. Even then he would have continued, though showing great fatigue.

This prolonged convergence of the eyes is one of the very important steps in seeing, as until it is accomplished there can be no definite marking out of one object from another. Sully notes that convergence is well established by the sixth week, and it is followed almost at once in the eighth week by the accommodation of the lenses, which makes each object still more distinct and definite in outline. The first well-defined seeing of objects probably occurs therefore about the second month, or between the second and third months.

Following a movement with the eyes can not occur until convergence is well established, but we find that Preyer notes the first following with the first convergence, on the seventh day. He notes again, however, on the twenty-third day, that his son followed a moving candle with his eyes and turned his head to

do so. On the thirtieth day Mrs. Hall's child followed the movements of a brush and comb, and on the thirty-eighth day, that of a gently swinging ball. This ability remains limited for a long time; thus we find Preyer's child from the forty-third to the sixty-fourth weeks just learning to look after an object that falls, and even when two and one half years old unable to follow the flight of a bird.

Looking for a hidden object.

After the baby gets distinct retinal images of objects through convergence and accommodation, and has learned to follow a moving object with his eyes, but one small step is necessary before his mental growth proceeds by leaps and bounds; *i.e.*, he must learn to look for an object that is out of sight. Herein lies the germ of memory and a clear manifestation of will.

Miss Shinn first observed this at the beginning of the eighth week, when the baby turned from studying her aunt's face to study her mother's which was entirely out of sight. Accommodation began at the same time, and was succeeded by a period of absorbed looking at everything that she could by any possibility twist her head and body to see.

Closely connected with this, from the eighth to twelfth weeks, is the first recognition of faces. Naturally, the one who takes the most care of the baby is noticed first, or, if several persons spend about the same time with him, the one who most satisfies his instincts and impulses. Before this, even as early as the third week, a baby learns to recognize people by touch, but here we are speaking of sight alone.

With this visual recognition, the baby has reached an advanced stage of perception, and we must now

adopt a different method of describing what goes on in his mind. So far the development of each sense has been considered separately, as if when the baby saw, he did not also touch or hear or taste, while actually the different senses coöperate almost from the beginning, although imperfectly. Connections are established with particular rapidity between certain sensations and certain reactions. Within two or three weeks after birth, for instance, the sight or smell of the milk will call out a definite response from the baby

Sensation and perception

Such a sensation has bound up with it certain other possible experiences that make it more than a mere sight or sound. The sight of the milk now means also to the baby a certain taste and satisfaction. Later on, the sight of his mother's face means being held and petted; the sight of his bath means splashing, and so on through all his various experiences. He is binding together thus the numerous different experiences that he gets from each sense and from different senses, and the result is that each sensation comes to stand for a great many more possible sensations that he can get if he chooses to exert himself to do so. When a sensation has thus acquired meaning, it has become a perception.

The first sensations that are associated are probably those of the taste and the touch of milk. These very soon become associated with the sight of the bottle, the connections being established even as early as the third week. A child will then push toward the bottle and a little later will cease fretting as soon as preparations for feeding him are begun.

Taste and touch.

It is probably the case that various touch sensations

are very early combined into one whole, as a baby distinguishes persons by the way they handle him long before he knows faces. But we have no careful observations on this point.

Touch and touch.

Sully's Extracts record that in the sixth week the baby for the first time turned his head toward a sound to see what made it. Preyer did not see this until the eleventh week, but then it became very common and by the sixteenth week was done so quickly that it seemed reflex. This connection never becomes close. Adults are rarely able to locate sounds very accurately.

Sight and sound.

We have already noted that between the eighth and twelfth weeks a baby first recognizes faces by sight and begins to seek for objects that are out of sight. He has now an immense amount of work before him in the way of connecting the various appearances of objects with each other and of tracing similarities between objects, and he proceeds to this work with infinite zest. If we will but consider a moment, we can see how complex a task this really is. The slightest change of position changes greatly the appearance of any object. A table is not at all the same thing to the baby on the floor that it is when he is in some one's arms, and both are different from the table that he sits up to in his chair. We grown people have learned to allow for these differences; but to the baby mind the visual world must present a series of metamorphoses far more startling than any that the fairy godmother is ever supposed to make. It is, then, small wonder that he believes in fairy tales two or three years later if the wonder created in his little mind by these first miracles leaves any lasting impression.

Sight and sight.

Miss Shinn gives such an excellent description of what takes place in establishing these connections between the various appearances of an object that we will take it as typical: "Later the same day (when six months old) she sat in my lap watching with an intent and puzzled face the back and side of her grandmother's head. Grandma turned and chirruped to her and the little one's jaw dropped and her eyebrows went up in an expression of blank surprise. Presently I began to swing her on my foot, and at every pause in the swinging she would sit gazing at the puzzling head till grandma turned or nodded and chirruped; then she would turn away satisfied and want more swinging. . . . At first, amazed to see the coil of silver hair and the curve of cheek turn into grandma's front face, the baby watched for the repetition of the miracle till it came to seem natural, and the two aspects were firmly knit together in her mind." Preyer tells also of how Axel in his seventh month gasped with astonishment when a fan was opened and shut before him. If we can imagine our own feelings if a table should suddenly begin to disappear and reappear, we can faintly understand his surprise.

When we consider that this same process of connecting the various aspects of objects has to be gone through with each object, we have a vastly increased respect for the working powers of the baby's brain!

Recognition of visual form grows rapidly, and by the seventh or eighth month we find some babies identifying pictures, or recognizing the real object from its representation, as with Mrs. Hall's child, who recognized a real dog from its likeness to a toy one that stood on the mantelpiece.

In all this the baby is getting his world of things seen well separated from each other and reunited into distinct wholes, but this process is much facilitated when he begins to connect sight and touch.

At first the two series seem to run side by side independently. The baby's hands grope and fumble with objects and learn to carry them to his mouth, but his eyes do not follow his hands. The connection between the two is established mechanically at first. The eye chances to catch sight of the hand that is fumbling some object and follows its movements as it does those of any moving thing. Sometimes the empty hand catches the eye and is carefully studied. Thus by degrees the eye forms the habit of watching the hand as it seizes, and later of directing it.

Sight and touch.

The time when active touch and seeing are thus first united is given very differently. Sully puts it as early as the ninth week; Mrs. Hall, the fourteenth; Preyer, the seventeenth; and Miss Shinn, the twenty-first. It seems doubtful whether it could occur as early as the ninth week, for then convergence and accommodation have only just been established, and the distinct seeing of objects would be too new a thing for the eye to control the hand with any success. More observations are needed on this point.

When the connection is once established, however, a baby is indefatigable in his efforts to reach and handle everything about him. Here we stumble upon the question whether a baby reaches for objects more than a few inches beyond his grasp, or whether he has an inherited distance sense, an instinct for distance. Baldwin, in a series of experiments on his child,

found that she never grasped at objects more than a foot beyond her reach, and soon learned to correct this error. He argues, therefore, for a rudimentary instinct. Preyer brings forward on the other hand, numerous illustrations of Axel's grasping for objects across the room; and finally cites this incident, which occurred in the ninety-sixth week. Axel was in the garden and his father in a second-story window. Axel held up a piece of paper, asking his father to take it, and held it up to him for some time, thinking that he could reach his father's hand.

The various observers record numberless attempts and failures to grasp, but whether the failure is due to wrong judgment of the distance or simply to lack of control of the hand is not evident from the accounts. As between Baldwin and Preyer, it is impossible to form an opinion until we have more extended data. Observations on one child are not sufficient material for a theory, especially when there is so much dispute as in this case.

The ability to direct the hand by the eye increases very rapidly when once begun, until the child of a year has fair control of the larger movements; but how much he lacks in detail is shown by his difficulty in doing many common things He has to learn to carry a spoon straight to his mouth, to dress himself, to button or lace his shoes, to throw a ball—in short, to do all the acts that with us are so habitual that we are almost unconscious of them.

In these numberless ways he is getting more and more definite ideas of the qualities of objects, and of their relations to each other in space—that is, ideas of distance. He now has but to continue repeating in detail what he has already gone over in large.

We shall see in the chapter on Growth in Control of the Body that from the sixth to the sixteenth year the child increases steadily, on the whole, in his power to manage his hands; here we see that mutually this is accompanied by constantly increasing knowledge of the qualities of the world about him and of his relations to it. We have as yet no account of the progress made from one to six years of age in the knowledge of things, but we know how insatiate the little child is in his desire to touch, taste, and handle everything about him. He is getting the knowledge upon which all that follows depends. His senses are literally the only avenues through which his mind can be awakened; they furnish all the material with which memory, thought and imagination will ever have to work. If they are left unsatisfied, the whole mind is starved.

Importance of the senses.

We need, therefore, from the time when the senses become more active, that is, from about the second month, to provide plenty of material for each sense, not forcing it upon the child, but putting it where the roving eye and wandering hand can catch it and be satisfied.

Bright, pure colors, and harmonious combinations of them, beautiful forms and sweet sounds, should be provided. For the hand, all sorts of objects, hard and soft, smooth and rough, accompanied by all the other touch qualities, should be supplied, and they should be of such a nature that they can go into the mouth without injury. A child must have objects to handle, even though we do object to having our nice things spoiled by hot little hands and wet mouths. If a child can not handle things, his knowledge of them is always imperfect, and so he must be provided with things that he can work over to his heart's content.

How seriously children who have had little food for their senses are hampered on entering school is shown by Dr. Hall's tests. A list was made of the words most common in primers and first readers; and two hundred Boston children who were just beginning first grade work, and six hundred and seventy-eight Kansas City children who had had seven months of school, were questioned to see what they knew about these things. The results are shown in the following abbreviated table.

Bearings on school work.

Object	Per Cent Ignorant of It	
	Boston	Kansas City
Bee hive	80	59.4
Crow	77	47.3
Bluebird	72.5	
Ant	65.5	21.5
Squirrel	63	15
Snail	62	
Robin	60.5	30.6
Sparrow	57.5	
Sheep	54	3.5
Bee	52	7.27
Frog	50	2.7
Pig	47.5	1.7
Chicken	33.5	.5
Worm	22.0	.5
Butterfly	20.5	.5
Hen	19	.1
Cow	18.5	5 2
Growing wheat	92.5	23.4
Growing potatoes	61	
Growing dandelions	52	
Growing apples	21	
Clouds	35	7.3
Stars	14	3
Moon	7	26
Knew what woods were	53.5	
Knew what river was	48	
Knew what hill was	28	
Hoe	61	5
Ax	12	18.4

The original list is much larger, but the ignorance of such common things as those mentioned here is a serious handicap to the child who finds them mentioned continually in his school work. Of course country children would appear to better advantage with this list of words than city children do. The point, however, remains the same, that it is useless to try to teach a child about things until he knows the things themselves. This experience it is especially the part of the home and the kindergarten to supply, for they can deal with the child just when he is eager to exercise his senses.

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CHAPTER VI

Memory

1. In getting data from adults, have them write out their earliest remembrances. In doing so they should state (1) the age as nearly as possible at the time of the event, and (2) how they know that it is not a false memory, that is, derived from others' accounts of the event.

Observations.

2. To test visual images, have various people (1) match a color from memory; (2) write out how some familiar object looks, putting in all the remembered details. Similar tests can be used for all kinds of images; see the account of Kirkpatrick's work in this chapter.

3. Keep a record of one child from year to year, to see what changes occur in his memories of different school subjects; or, test the pupils in any given room to see what subject of the previous school year they remember best. In doing this, you must consider the teacher and the subject that she likes best, as well as the pupil's interests at this age.

4. Make a collection of number or calendar forms, or of cases of colored words.

When a baby sees or hears or has any other sensation, however vague it is, there is still some modification of his brain, some chemical change in the structure of his nerve cells, and this change remains when the sensation has passed away. When two senses are appealed to at once or in close succession, as in seeing the breast

Memory and sensation.

and nursing, two or more brain centers are affected, and for some unknown reason fibers of connection are likely to form between them. When this has happened a number of times so that the fibers are well established, the baby begins to show signs of recognition. This happened as early as the twenty-second day with Preyer's boy.

We also find memory showing itself faintly in another way when the baby turns to look for some object that has just moved out of sight. Here there has hardly been time for the retinal activity that was roused by the object itself to die out; the memory has persisted only a short time after the sensation, but still there is the beginning of memory.

These first traces left by sensations upon the brain are sometimes called organic memories. They are not mental pictures of past events, but they make it possible for a baby to do with greater ease the acts which at first were very imperfect. For example, the first step in moving the eyes simultaneously is thus made possible.

Organic memories.

Organic memory is what makes the earliest perceptions possible. We have seen already that perception differs from pure sensation, since in it the sensation has become bound up with other sensations, or rather with the traces of other sensations. The binding is done by organic memory. The nerve centers receive a stimulus differently when they have already been modified by previous stimuli. They now contain within themselves the changes caused by previous seeing or hearing, and so are better prepared to receive again the same sight or sound or one like it. It is very much like getting

Perception and organic memory.

acquainted with a person. The first time we meet him, we are rather formal, and the interchange of thought is not very free; the second time it is freer, and so on. So the brain cell does not respond readily at first, but later is more easily aroused.

The same thing occurs in forming a habit, except that the process is more complicated. Usually we limit the term "habit" to series of *movements*, but we also hear the term "habits of *thought*," and we seem to form habits of thought much as we do habits of action. Perception—*seeing* objects as solids and as distant, as having characteristic tastes and touches and sounds—is simply the most inveterate mental habit formed, and is much the same for all people. Other associations, such as connecting a certain dress or place with a certain person, are also mental habits, but they vary greatly with different persons, and they usually call into play memory images as well as organic memories.

Organic memory and habit.

In the case of habitual movements, we saw that a baby soon learns to put his hands to his mouth; he gets a connection established between the feeling of his arms when they move in a certain way and the pleasure from sucking his thumb. This means, on the physiological side, that fibers of connection between certain sets of brain cells have come into contact, so that now an activity in one set is likely to rouse activity in another set. Any movements that occur simultaneously or in quick succession, if they are repeated often enough, and are pleasurable or aid in reaching some end, will thus become connected and form an habitual series. Then any movement in the series will call out the next, this the next, and so on.

Such a habit is an organic memory in the baby. He has few or no distinct images, but certain connections have been formed between certain nervous centers. The same is true of the adult, in such cases as learning to ride a wheel. It would be impossible for us to *describe* the various positions that we must assume in order to keep our balance, and yet our nerve cells have learned their lesson so well that we rarely get a tumble. The education of the spinal cord and brain centers to perform long series of movements accurately goes on apace by means of organic memory, that is, by means of the changes made in the nerve cells and their connections, which persist and modify their future action. All this, it must be understood, takes place at least below the level of clear consciousness, and often below the level of consciousness itself, unless we call reflex action conscious.

Habits, then, may be formed in the baby or small child simply by regularity in the conditions about him —regularity in his meals, in the kinds of food given him, in his hours of sleep and waking, in everything in his daily life. The rapid growth of his nerve cells makes education and the acquirement of habits especially easy.

With the older child and the adult habits are also formed voluntarily as well as involuntarily. We decide that we want to learn carpentry or embroidery, or that we will learn to tell the truth or to acquire some other virtue. Here we must in the first place keep the end that we wish to attain so clearly before us that old associations can not besiege us or forgetfulness overtake us. A desire to reach some end is so essential that it is of little use to force a child to

do daily a thing that he dislikes. The pain which he constantly connects with the act or the study is so much stronger than the other connections that are established that even after years of discipline the habit falls off within a month or two when external pressure is removed. We all know that a teacher who wakes herself at six o'clock for nine months of the year will sleep until eight through the summer vacation, after only two or three mornings of wakefulness. So a child forced to go through certain mental or bodily movements for which he feels only dislike drops them as soon as restraint is taken away.

There is one possible exception here when a child has a prejudice toward a study or act, but finds it pleasurable when he actually begins it. In such a case a habit may be formed, but not unless the original dislike yields to a later pleasure or to a recognition of the value of the habit. When a habit has been formed, the first clear attention which was necessary for its performance is no longer required. The nerve centers have learned their lesson.

Just because a habit of thought or action frees the mind for higher things, it is important that a child should at an early age acquire the largest possible number of good habits which he will not need to unlearn later. It is unpardonable for parents so to neglect a child that when he is twelve or fourteen years old he has to spend his time in learning regular habits of eating, habits of cleanliness—all those habits which relieve him from constant thought of his bodily wants and make social intercourse easy. The boy of this age has before him the more important task of forming

Importance of good habits.

habits of moral thought and action. He is shaping his ideal of character, and he ought not to have to struggle constantly over these little things which a small child learns so easily.

It is one of the important tasks of parents therefore to see to it that the little child grows insensibly into good habits of taking care of his body, and into the social habit of considering others equally with himself.

From another standpoint we can see how deep the traces of our early experiences go when we consider our earliest recollections. It has always been of much interest to men to ascertain how far back their memories go, and it is also of interest to teachers and parents to know whether the experiences of infancy and early childhood will be remembered by the adult.

Earliest recollections.

Sometimes we find a person who claims to remember an event occurring in the first year of life, but few of us can go back of the fourth year. Even then we are likely to confuse true memory with descriptions that have been given to us. Do events previous to the fourth year, then, have no effect upon later life? On the contrary, in those important years many things have been acquired—notably walking and talking—which through constant practice are never forgotten, and it seems probable that these early experiences leave traces upon the growing mind and brain that determine to a large extent the emotional temperament of the child—the likes and dislikes, which either direct him well or must be fought and conquered with much effort later on. There is not much collected evidence here, but what there is is suggestive. It

is well known that if a little child receives a severe fright, fear is likely to persist far into adult life, although the person forgets the occasion that gave rise to the fear. The image is lost, but the organic and emotional effects persist. Dr. G. Stanley Hall tells us that upon visiting the farm where he lived until one and one-half years old, the feeling of familiarity was strong, and at special places a decided emotional tone arose, without any knowledge of what experience was connected with that place. We have other records of adults going to places connected with babyhood or early childhood of which they had never been told and having this same emotional tone and feeling of familiarity. Most interesting is the following anecdote told of Helen Keller. She became deaf and blind when about one and one-half years old. Before that time her father used to sing to her, especially two plantation songs of which she was very fond. One day, when she was a girl of eighteen and had been taught to speak, and was at the piano "feeling the music," those songs were played to her. At first she was bewildered, and painfully excited; then she repeated some of the words of one of the songs. There were evidently connections between the touch center and the auditory and word centers, such that these dispositions, left from the first year and a half of life, could be revived. There are other cases also of disease bringing back memories of very early childhood.

Now if this is generally true, the first four years of life are as important educationally as any that succeed, or rather, they are more important. Nothing can be so important as to start a child out in life with good health and with a healthy equipment of emotions

and habitual actions. That these can not be supplied by talk, is evident. Example is the only teacher. Everything that is given to the child should be of such a character that the feelings and actions aroused by it can be the basis for the finer emotions and actions that come later. He should live in an atmosphere of trust and confidence, where there is no fretting and worry, much less dislike and hate. The music and stories that are given him should cultivate the positive, serene, fearless, high-minded attitudes. I have seen some little children whose confidence and joy were such as to make one believe almost anything possible in this direction. We must be sure that our children's restlessness and whining are not simply the reflection of our own worry and cowardice before we can assert the powerlessness of early surroundings to shape the very little child.

So far memory has been considered principally as a matter of the changes in nerve centers, but in its narrower meaning memory includes rather the mental side—the revival in consciousness of some previous experience. How this conscious revival of an experience develops is what we wish to trace now. Preyer's observations on this point may be given in full here, as most other observers agree substantially with him. The first memory image is one of taste, followed by smell, touch, sight, and hearing, in the order given. On the twenty-second day, his boy associated the breast with nursing, as was shown by his movements. During the second and third months, the presence of strange faces excited wonder, but the absence of familiar ones was not noticed. The memory for *faces* was the first visual

Development of memory images.

memory. In the twenty-fourth week, the baby saw his father's image in the mirror and at once turned to look at his father, evidently recognizing the image. In the twenty-sixth week, he repeated this, and compared the face with the image, turning from one to the other several times, but he had as yet little distinct memory. In the seventh month, he did not recognize his nurse after an absence of four weeks. Not until the forty-third week did he miss his parents when they were absent, or miss a favorite toy when it was gone. Another observer says that one little girl of ten months recognized her father after four days' absence. Perez also quotes the case of a child seven or eight months old who very much wanted a piece of bread that looked like some favorite cake. When he tasted it, he threw it away angrily, showing that he had an image of the taste of the cake, with which the reality did not agree.

In the fifty-seventh and fifty-eighth weeks, in looking at the image in the mirror and at a picture of himself, Preyer's boy apparently recognized both and passed his hands to the back of each, much puzzled by the differences he saw. Evidently the memory was becoming more distinct and detailed. In the sixtieth week, he recognized his mother's image as different from the reality.

In the sixty-first week, he burned his finger in the candle, after which he never put it in again, though he would jokingly make movements in that direction. The memory image of the pain was well developed, though memories as a rule were not stable. In the twenty-third month, he recognized the playthings from which he had been parted nearly three months, which

proves him well started toward the development of imagination.

In these first experiences the baby's memory is a very vague one. As James says, his world is a "big, blooming, buzzing confusion," whose parts have to be made distinct from each other and shaped into distinct, unified objects. One certain experience, like being fed, is repeated under many conditions—now in light, and now in darkness, now in one room and now in another. The two constant things, that his mother is always there and that his hunger is always satisfied, by their constant repetition and great satisfaction become impressed upon him, so that he soon recognizes his mother. Take also his recognition of his mother's face. At first certainly it is to him only a light patch against a darker background, moving from one place to another. But as he sees more distinctly and is able to follow it with his eyes, he learns that all the different appearances, side and front and back views, belong to his mother's face, and the constant repetition of that face with its accompaniment of increased comfort soon teaches him to recognize it apart from any one place or time. In brief, the memory image becomes freed from memories of any particular time and place by having the one constant experience — the mother's face—in many times and places. This is the usual experience.

Freeing of memory images.

When psychologists use the term "image," they mean any revival of a former experience in a form distinct enough for us to look at it mentally and describe it. The revival of the sound of a piano, of the color of a sunset, of the taste and smell of coffee,

of the "feel" of velvet, and of the exertion of running or stretching, are all equally images. If we place in these some definite time when we experienced them, we say the image is a memory image; while if we combine them in new forms, we approach imagination. Memory images, that is, reproduce our past life in much the same form as we lived it; imagination makes new combinations.

Memory images.

Images are evidently derived in the first place, therefore, from our sense life; that is, we get our materials of knowledge through the special sense organs—the eye, ear, skin, nose, tongue and the movements of the muscles. The feelings aroused in this way directly by objects, we call sensations or perceptions of sight, sound, touch, smell, taste and movement; and when, in the absence of the object, the sensation or perception is revived or remembered, we have images of sight, sound, etc., or, to use the Latin terms, visual, auditory, tactile, olfactory gustatory and motor images.

If you recall your childhood's home, you will probably get good examples of most of these. You can see in your mind's eye the old house, its various rooms and the people in them (visual); you can hear your mother's voice (auditory); you can taste some especial food that she excelled in cooking (gustatory); you can probably smell some characteristic flavor or garden product or perhaps some medicine that you had to take (olfactory); you can feel your mother's kiss or, perhaps, some whipping or spanking you received; and you will probably find that almost all your memories of the place are bound up with your

feelings of movement about it—climbing trees and hay-mow, and so on.

In each person some of these classes of images are much more distinct than others. Usually the visual images are clearest, and are bound up with comparatively indistinct motor images. The auditory come next, and the others are still less prominent. About one person in six has more distinct motor images than visual; and, rarely, we find a person whose touch or smell images are the clearest.

Most common types.

When from birth or by accident a child is deprived of any sense organ, the corresponding images grow dim, and usually disappear if the accident happened before the age of four years. A blind person, for instance, blind from three years on, has no images of color or form except what he gets from touch. A deaf person has no sound images. Only with the greatest difficulty can we imagine what the mental life of a Helen Keller must be like. In her Autobiography, in all her descriptions, the terms are those of touch, movement and smell, with one or two visual terms almost certainly obtained from her teacher. Can you imagine the enjoyment of music from the jolting of the vibrations of the instrument? Or how it would seem to have your appreciation of flowers determined solely by their perfume and texture? The vast world of pictures and natural scenery is non-existent for her. Of course there is some compensation, for the senses that are left become much more acute, and the images correspondingly so, but still it is difficult for us to imagine how we should feel under such conditions.

Unusual cases.

And yet the same differences, although to less degree, exist between ourselves and other persons and ourselves and the children we teach. You, let us say, are especially a visualist. If you can read a good description in visual terms, or see a diagram or drawing, you can understand a thing perfectly. But this child is a motile. The visual terms call up only shadowy, indistinct images to him, and your diagram is actually confusing. He never would think of representing the facts in that way, and he feels more and more like a stranger in a strange land as he reads on in the book. The audile has much the same experience. Yet neither is a stupid child; each only needs a little help to translate the lesson into his own images. When you remember how much of our school work is predominantly visual, you can see in what hard straits these two classes of children are put. We even invent methods whose whole tendency is to throw all the stress of learning upon the visual image.

Bearing on education.

If we consider for a moment, we can see how artificial any such method is. In his daily experience a child never uses one sense alone. A boy with a new marble looks at it, rings it, and tries it in shooting before he feels really acquainted with it. He gets all kinds of impressions from it that he can, and many of them are simultaneous. It is true that some one or two feelings emerge from the others and stand as symbols for the rest, but the presence of the others gives a background and richness of meaning whose importance we do not sufficiently estimate. Take our own experiences—we never can go to an exhibition without being greeted on all sides by requests not to touch

anything, and how defrauded we all feel by such an order is evident from the disregard of it.

We say that only a man of the same craft can fully appreciate a certain piece of work, because he can enter into its difficulties and delights—that is, he alone has all the sorts of images that constitute the memory of its making. A woman who has never done embroidery grumbles at the price she has to pay for it; the one who has done it may not like the price either, but she says the work is worth it—she has the other images that put into the visual image a deeper meaning than the first woman can get.

So with the children, let us give them as great a variety of images as possible, while still appealing to the form most clear to each. Present a subject in such various ways that at least one way shall appeal to the visualist, the audile and the motile, and then bind the proper motor expression with it strongly and indissolubly by giving opportunities for expression in some form of handwork. The importance of expression has already been emphasized in various places; here again it comes up as the final test of the clearness of the image and also as the clarifier of the image.

The laws of memory.

In 1885 the experiments of Ebbinghaus on memory were published, in which were stated in an exact and general form facts which before were only vaguely recognized. As later experiment has confirmed these for children as well as for adults, an account of them is in order here.

Ebbinghaus took 2,300 meaningless syllables and shook them together, then, drawing them out haphazard, he made lists of them, varying in length from six to sixteen syllables. These lists were then repeated

to the subject in a monotonous voice, at regular intervals, until he could reproduce the list correctly. A very large number of experiments was made thus, and elaborate precautions were taken to eliminate the effects of fatigue, of association, of health, etc. As the outcome, Ebbinghaus was able to formulate certain laws thus:

1. A long list requires more than a proportionate number of repetitions before it is memorized, *e.g.*, a list of seven syllables required but one repetition; one of twelve, seventeen repetitions; one of sixteen, thirty repetitions.

2. Poetry, into which enter associations of sense and rhythm, requires but one-tenth as many repetitions as the nonsense syllables.

3. There is an unconscious or what we have called an organic memory, for even when a list previously learned is so forgotten that it is not recognized, it requires but two-thirds of the original number of repetitions to relearn it.

4. Forgetting proceeds thus:

After 1 hour, more than one-half the original work must be done in relearning the list.

After 8 hours, two-thirds of the original work.

After 24 hours, about two-thirds of the original work.

After 6 days, three-fourths of the original work.

After 1 month, four-fifths of the original work.

That is, forgetting occurs much more rapidly during the first eight hours than afterward, and after one week occurs so slowly that it is hardly perceptible except over a long lapse of time. This shows the great value to the teacher of reviewing each day the previous

day's lesson, in order to find out how much her pupils are likely to retain permanently.

5. When once learned, a long series is retained better than a short one.

6. When many repetitions are necessary, distribution of them over a longer period of time lessens the number. For instance, a series of twelve syllables required thirty-eight repetitions when distributed over four days; but sixty-four when the repetitions were consecutive.

7. Associations are formed between all the members of a series, so that even if the order is changed, the series is more easily learned than at first. The strength of the association is less when moving backward than forward; and less for members of the series farther off than for the nearer ones.

Mr. Jacobs and Mrs. Bryant took up one of the details of Ebbinghaus's work and experimented with school children to ascertain how long a series could be learned with one repetition; how the span of memory (*i.e.*, the length of series thus learned) varied with age, and what relation it bore to the pupil's rank in school. They used digits, omitting 7, and letters, omitting w, as more uniform in sound than nonsense syllables. They give the following table for the span of girls.

Age.....	8	9	10	11	12	13	14	15	16	17	18	19
No. girls	8	13	19	36	41	42	42	72	66	50	30	14
No. nos.	6.6	6.7	6.8	7.2	7.4	7.3	7.3	7.7	8	8	8.6	8.6
No. let'rs	6	7	6.6	4.6	6.5	6.7	6.7	7.4	7.9	7.3	8.2	8.9

This shows that the span increases with age. They found also that the children with the largest spans were usually those whom the teachers classed as their

best students, although there were some exceptions. Bolton also found that the highest span is a measure of the power of attention; but he puts the limit of the memory span for numbers as six for public school pupils. The span for girls is also higher than for boys. All observers find that the girls' memory is better than the boys'.

Finally, Kirkpatrick experimented upon pupils from the primary grade through college to find what kind of memory images were best held. To do this, he first made three lists, two of ten *words* each, and one of common *objects*, avoiding associations as much as possible. One list was *read* to the pupils; the words of the second were *shown* one by one upon the board; and the *objects* named in the third list were shown. The pupils were then asked to write out as many words in each list as possible. It was found that 6.85 words out of the ten in the list *heard* were recalled; 6.92 of the ten in the list *seen;* and 8.28 of the *objects* seen; that is, the auditory memory was poorest; the visual memory of the word next, and the memory of the object itself the best.

The memory of the college students was but two words better than that of the primary children.

They were then given three more lists of words. The first consisted of names of sounds, and the pupils were asked to think of the sound; the second, of names of colors, or lights and shades, and they were asked to think of them; the third, of names of objects, and they were asked to recall the object. They were then asked to write out the lists. The results show that 6.98 names out of the ten in the first list were recalled; 7.91 of the ten in the second; and 7.48 of the ten in the

third. That is, the visual images of colors, or lights and shades were slightly better than the auditory images of sounds, or the memories of objects.

After three days, they were asked to write out what they could recall of the first three lists, with the startling result that .91 of list two, and 6.29 of list three were recalled. That is, while the visual memory-average of the words had declined to less than one word, from the original 6.92, the memory-average of the object itself was lessened only by two from that immediately after the experience. There could hardly be a stronger illustration of the superiority of things to words in early education, and of the activity of the senses and its effects upon memory.

Kirkpatrick's experiments can hardly be considered tests of the pure auditory and visual word images, for any word has numberless associations with it that modify our image and memory of it. The experiments where numbers or letters or nonsense syllables were used to exclude associations, show that with younger children pure auditory memories are stronger than pure visual; while with adults the reverse is the case.

As the child grows, characteristic interests arise and control his memories. The best memory for boys —42 per cent—is in the first year of high school; for girls, the maximum of 47 per cent is also in high school; the poorest memories for both boys and girls, 17 and 18 per cent, are in the third grade. Negroes and white children seem to be nearly equal as to mere memory.

Effect of age and interest on memory.

Taking into consideration interest as well as age, it has been found* that during the period from one to

*Colegrove.

five, visual, auditory and motor memories are very prominent. From the fifth to the ninth year, the motor memories of girls increase markedly but decrease from ten on; in boys, they increase slowly from five on, culminating at fifteen. In both cases we trace directly the effect of habits of life. Girls, after the tenth year, usually exercise much less freely than before, while boys after that age constantly increase the amount of exercise.

From ten to eleven both boys' and girls' memories for near relatives increase; and from twelve to thirteen decrease, but increase for all acquaintances, marking the entrance into wider social relationships so characteristic of adolescence. Between fourteen and fifteen, the visual and auditory memories of both increase greatly and also memories of places, doubtless marking the beginning of a wider esthetic sense.

Educational applications.

If the above statements are correct, is it not a mistake to postpone manual training, sewing and so on, to the high school age? Should we not rather put them at the time when the motor brain regions are so active as this abundance of memories proves them to be? Again, what is to be done with the child of the third grade, when memory is comparatively poor? We saw before that this is one of the periods of rapid growth. Is it a time when school work should be lightened? That the auditory memories are best in children under fourteen, points to the value of beginning the study of languages early, and any work that demands memorizing and has little reasoning connected with it. With adults, the best way to memorize is to get a system or theory around which memories can cluster. With the child

this plan too should be followed, but committing to memory is much easier than with adults.

Finally, the widening of memories for friends and esthetic objects between fourteen and fifteen, points to the importance of widening the child's experience in both these lines. In all cases, we seem to see the close connection between interests and memory.

Conditions of good memory.

In a former chapter we spoke of the effect of fatigue and health upon memory, showing that in proportion as health was poor or fatigue was great, memory diminished. Health and freshness are, then, two conditions for a good memory. On the mental side, to train a child's memory, take up a subject when his memory for that class of things is best and so present it that he shall feel its close connection with his own life and shall be on the *qui vive* to get information about it. Knowledge so obtained has many interconnections and holds together well. No other will endure.

Unusual conditions.

Mothers and teachers not infrequently find certain mental peculiarities in their children that they do not know the significance of and are in doubt how to treat. Among these are "colored hearing," and number, word and time forms. Quite a large proportion of people connect certain colors with certain sounds, or with certain words or letters. The high notes of a violin may seem pale blue; the resonant trumpet tone, blood red, and so on. Each letter of the alphabet may have its characteristic color, or all the vowels, or only names of persons. It is practically impossible in many cases to find the origin of these various associations, but they may go back to very early memories, or they may be due to unusual

congenital connections between the brain-centers concerned. They do not mark any mental abnormality, and it is not wise to ridicule a child who has them. To him they are perfectly natural.

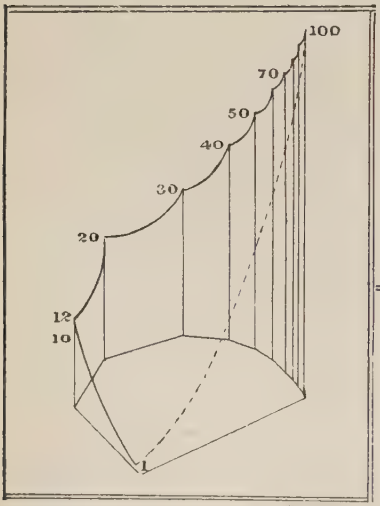

DIAGRAM 5. NUMBER FORM OF MR. WALTER LARDEN, FORMERLY OF CHELTENHAM COLLEGE, ENGLAND. THE FAINT LINES ARE TO SHOW THE PERSPECTIVE. (GALTON.)

Number, calendar and alphabet forms are much more common. It is estimated that of men one-sixth to one-fifteenth possess some kind of form, and of children and women a larger proportion. In all such cases, the numbers, days or letters are arranged in a definite form in which the person always sees them. The diagram may be colored or

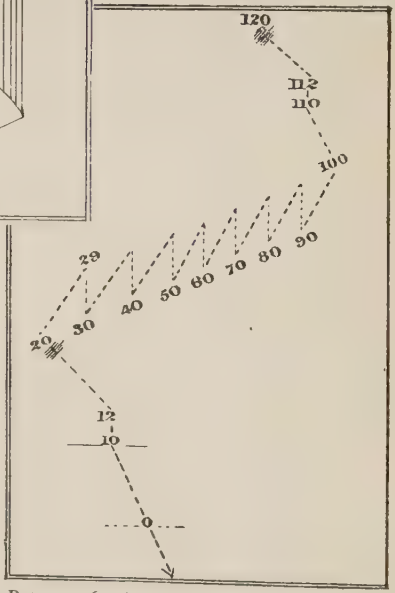

DIAGRAM 6. AN HEREDITARY NUMBER FORM COMMON TO A BROTHER AND SISTER. (GALTON.)

not. Several forms are shown in Diagrams 5 to 10. This form is the same for the same person from year to year. It seems so necessary to the person that he can hardly imagine how he could do without it. It varies from the simplest arrangement to exceedingly complex ones of definite shapes, in which each number has its place. Here also the origin

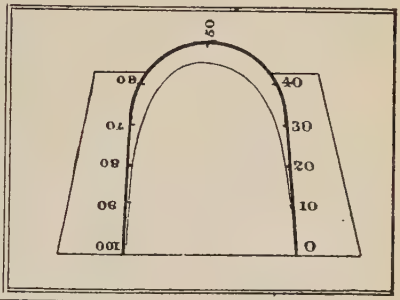

DIAGRAM 7. NUMBER FORM OF PROF. SCHUSTER, AN ENGLISH PHYSICIST. THE NUMBERS ARE ON A KIND OF HORSE SHOE LYING ON A SLIGHTLY INCLINED PLANE. (GALTON.)

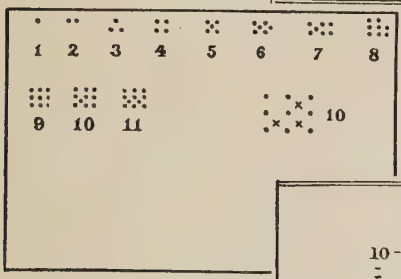

DIAGRAM 8. A COMPLEX NUMBER FORM MADE UP OF DOTS RUNNING UP TO 1,000. IN 10, ETC., THE ODD DOT MAY APPEAR AT ANY OF THE CORNERS MARKED X. (GALTON.)

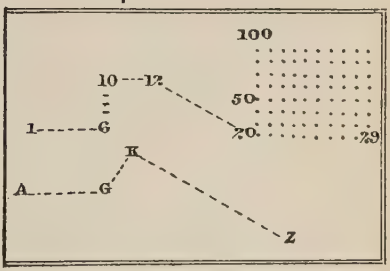

DIAGRAM 9. AN HEREDITARY NUMBER FORM SHOWING PECULIARITIES WHICH RUN THROUGH A WHOLE FAMILY. (GALTON.)

is difficult to trace. In some cases it seems to be hereditary—several successive generations having the same form. In others, its origin is hidden in obscurity. As with the colored hearing, it does not mark any abnormality, and the best policy is to leave it alone. On

the other hand, one attempt at least has been made to teach a number form to all children, but the wisdom of this is questionable.

Summary.

The material for memories comes through the various sense organs and takes the form of sight, sound, smell, taste, touch, and motor images. Of these, the visual motor and auditory motor are the most common forms, although we find occasional cases, especially among the deaf and blind, where touch and smell are the most prominent. Usually,

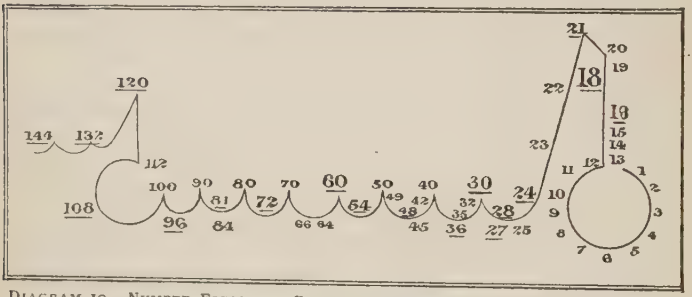

Diagram 10. Number Form of a Gentlemen who Learned to Tell the Time at a Very Early Age. The Most Prominent Numbers Are Those Found in the Multiplication Table, Especially 12. (Galton.)

there is more or less combination of all the forms in memory, just as there is combined use of most of the senses in ordinary experience, and hence it is useful to give a child all sorts of sense experiences. He thereby gains a valuable background of images upon which he can depend if any one image is at fault. Memories of individual experiences do not usually go back of the fourth year, but experiences previous to that age leave their mark on temperament and feelings. The vividness of memories at any age varies with the condition of health and the interests of that age.

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CHAPTER VII

Imagination

Observations.

1. Collect instances in which a child's dream has created a lasting fear. Be sure that the fear did not exist previous to the dream. Collect instances where the dream created pleasure. Are such cases likely to be as common as the other? Why?

2. Observe in some one child whether this order is followed in the growth of imagination:

(1) Recalling and telling some experience of his own.

(2) Listening to stories told him.

(3) Inventing new stories himself.

3. Collect instances of the personification of inanimate objects. Did the children believe the object to be alive or not?

4. If you know of any case of an imaginary playmate, describe it fully, noting especially the age of the child when it began; how long it lasted; sex of child and of playmate; whether father or mother had such a playmate.

5. Collect statistics from school children on the following points. Get the age, sex and grade of each child on his paper. In getting such data, to secure free utterance, it is a good plan to tell the children not to put their names on their papers.

(1) If you could be to-day just what you want to be, what would you choose? Why?

(2) What do you want to be when you are grown up? Why?

Various sensations leave their traces on the baby's brain, and as persons and objects move about him, he learns by degrees to connect their various aspects with each other, that is, he learns to perceive objects instead of merely receiving sensations. Next, after he perceives objects as wholes, or while he is learning so to perceive them, comes recognition of them, and finally distinct memory images of them and desires for them when they are absent. Thus the baby arrives at a consciousness, though still vague and imperfect, of his past as well as of his present. He is no longer confined to a now, but looks backward to a then.

Memory and imagination.

As his memory images become more stable, they also become freed from definite time and place associations. His experiences with chairs, tables, father and mother, and so on, have been so numerous that his image of a chair or table, is not of his use of it at some one time and place, but of it in an indefinite time and place setting. He *may* have the definite setting, but he *need* not. In this way, the memory images become more flexible and subject to his will, and presently we find him making alterations, picturing himself as doing something this morning that he has not done for a month; making little plans of what he will do after dinner, and in such ways showing his power to manage his images. Then suddenly he becomes conscious of his power, and forthwith launches boldly out into a riotous sea of imaginings. Sometimes, indeed, he becomes swamped, or on the other hand he mistakes his buoyant fancies for the dry land of facts, but by degrees he learns to control them, and to see their limitations.

Spontaneous new combinations.

At first, however, his new combinations are very inconspicuous, and more or less accidental. Perez thinks that they are first formed spontaneously, especially in sleep. Some slight disturbance of the circulation, or change in the brain, may lead to the establishment of new connections—connections which cause new, grotesque, or pleasing mental combinations. I think we may safely say that the growth of the association fibers in the first months of life would lead to such new combinations, without any effort of will on the child's part. These spontaneous combinations will be found, though to less degree, as the child grows older, and doubtless give suggestions for the voluntary combinations that the child begins to form between the second and third years. There can be little question that such combinations do occur in dreams, and that they seriously affect the waking life of many children. Mr. James gives a dream of his little girl as illustrative. She woke with a scream saying that a dog had bitten her, and for months afterward she had spasms of terror at the sight of a dog, although up to that time she had liked them. I myself have a little friend who woke crying that an elephant was in the room and was going to eat her. Her mother said that for weeks she would not go into the room alone even in the daytime, and even after six months she would not sleep there. If such occurrences are at all common, we can see how easily a child can live in a world wholly different from that known to us, and how, if his images in sleeping life are vivid enough, he may confuse them with reality. There seems to be little that one can do with such an unfortunate dream except as far as possible to make

the child realize that it was only a dream and nothing to be afraid of.

The systematic forming of new combinations by the child occurs first in listening to stories, but this does not come until after he has learned to tell little stories of his own life—what he has seen on his walk, what he did at grandma's, and so on. He forms vivid images of these stories, as is shown by his insisting upon the same words and facts in the story every time they are told.

Systematic forming of new combinations.

Only after this does he begin to invent stories of his own, but once started, he carries his story-telling to great lengths. The stories, like all his other fancies, are improbable and inconsistent to us, but not so to him, with his narrow experience. There is nothing incredible to him about the hole in a stone being the abode of fairies or about living in the water with the fish, and so he both accepts and invents fairy tales and myths with equanimity. As his experience widens and he learns more of the world about him, his wild imaginings give way to others that are more in agreement with fact, and so less conspicuous.

It may be partly true also that a child's fancies are so unbridled because his perceptions are indistinct, and so he can read into them whatever he pleases without seeing any discrepancy with what is before him. In this connection it is worth noticing that the same child who can be so wildly imaginative, finds great difficulty in framing a clear image from a description. He has not the power of concentration necessary for this.

There seems to be at times a real illusion in these fancies. The child will lose himself in them for the

moment. The fancy is so real and divides from the object itself so gradually that often he can not say where one ends and the other begins. He always starts with some actual object and proceeds to adorn it with his fancy, usually giving it qualities suggested by its likeness to other things.

Personification.

As persons interest children most, they tend to personify all objects. The number of pretty and pathetic illustrations of this is infinite. The stupid letters of the alphabet are made into persons, and the child talks to "dear old W," L is sitting down, and F and H are facing each other and talking.

The most prolonged case of such personification is given by Miss M. C. Whiting. Each number up to 12 had a distinct personality for her, and the various combinations of them in arithmetic made the subject most fascinating. She began this at the age of eight, and continued it for four years, taking it for granted that other people thought in the same way. The various combinations are made by the numbers acting in various ways, thus: 8 is so angry that she puts thoughtless 5 into 13. Here he stays until kind 9 rescues him and helps him into 14. 2 helps 6 and forces him into 12, a kind of prison. 8 finds 6 here, and puts him into 14, which is pleasant but beneath his dignity. 7 is already there by the aid of 2, and 8 hurls him into 15, a dungeon. 5 had already got himself here by the unintended moves of 3, but he persuades 4 to pity him and put him into 20, a most desirable station; and so on to 12×12.

Jean Ingelow tells us that when she was a little girl she was sure that stones were alive, and she felt very

sorry for them because they always had to stay in one place. When she went walking she would take a little basket, fill it with stones and leave them at the farthest point of the walk, sure that they were grateful to her for the new view. Another little girl thought that the leaves were alive, and autumn was a mournful time to her because the leaves all had to die. *Moving* things are likely to be personified, especially if they are noisy. Machinery, engines and steamers are terrific personalities to the little child. But he also personifies his moving toys, his ball and his hoop. Even a sliding cushion was given life by one small boy. It seems odd to us that children should think of such things as *growing*, but a goodly number of them do. Naturally enough, children attribute *solidity* to all objects at first, and so we find them trying to pick up the sunbeams. One little girl wants to wash the smoke and get it nice and white; and another wants to see the wind. When the wind was blowing strongly toward a neighboring town, one little child said he would like to go too because there must be so much wind there.

Along with this personifying of all objects is the tendency to look upon them all as made for the use of people or even of the child. One little girl thought that the flowers opened to please her, and that the sun came out to light her. It is very difficult in all such cases to know how far a child is accepting literally the figurative statements of other people, and how far he is imagining.

It is equally hard to draw the line between imagination and reason. Thus, if a child sees a certain object, his fancy at once forms pictures of how the object came to be what it is. For example, one little child met a lame tramp on his walk and at once began to

tell his mother that the tramp had been "riding on a big high horse, and the horse had jumped and thrown him off and hurt his leg." Another little fellow saw the bumblebee industriously buzzing in the window, and told his mother that it was asking for a lump of sugar. Then he addressed the bumblebee and told him that the sugar would give him cramps. The transition from fancy to reason is clear in the case of the tramp. The picture of the horse is the child's explanation of how it might come about that the tramp was lame. The induction does not seem to be different in nature from the working hypothesis of the scientist.

Imagination and reason.

It is also often difficult to distinguish between the playfulness of the imagination and lying. A child will sometimes come home and reel off long stories about what he has been doing and seeing, which have little or no truth in them. This tendency will last for months at a time. The thing one should look for in such a case is the motive. Does the child *intend* to deceive you or is he just playing with images, and asking you to play too? One way to find out is to respond to his story with some pretended doings of your own, confessing at the end that it was only play, and asking him if his story was not also. If in some way like this he is reminded that his ideas are not like the facts, he will usually outgrow the tendency. Only the intention to deceive is dangerous, and this we shall speak of shortly.

Imagination and lying.

Loneliness, distance, and mystery are great stimulants to a child's fancy. Probably most children have fictitious characters with whom they play at times, but the imaginary playmate reaches its fullest development

in the child who plays alone. It is not uncommon to find that such a child has created for himself an invisible companion who is with him most of the time, and who remains in existence for two or three years. This companion has a name and a definite appearance and is a source of much comfort, as well as, frequently, the alleged reason for much misconduct. "Bokman made me do that, mamma," is the reason sometimes given by one little girl that I know. Or, "Bokman is wearing her blue dress, can't I wear mine?" It is frequently the case that the tendency to create such companions is hereditary. Usually when a child begins school, or gets absorbed in outside things, the companion fades away, but I know of one case in which it has persisted up to middle life.

Imaginary playmates.

The distant world, the world beyond the hills, or at the end of the rainbow, or above the clouds, is the source of many childish wonderings and imaginings. I remember that in that charming story "The Golden Age," there is an account of one picture in a book that was a source of constant questionings by the children. There was a hill beyond which church spires could be seen, and ships were sailing around a bend of the river into the city. One day in a friend's house they found a book with pictures of the town. What joy was theirs really to see what they had wondered over so long!

Distance and mystery.

The degree to which these fancies may be carried, and the amount of reality necessary to bolster up the imagination, varies greatly. Sometimes a child may be urged to greater flights by a little make-believe on our parts. For instance, in playing store with a

little girl of five, I said I wanted some blue ribbon. She answered that they were out of it, but I pointed under a box cover and said, "Why, no, there is some." The box cover was green. "No," she said, "that ribbon is green." I persisted that there was blue ribbon under the cover, and took the cover away, pointing to the brown couch beneath, and saying, "See, there is blue ribbon." "No," she said, "that is brown ribbon, don't you see it is brown?" But presently, as I still persisted, she accepted my view, pretended there was blue ribbon, and taking it up—a purely imaginary ribbon—brought it to me. The relation of invention to imagination here is most interesting.

Vividness.

So far we have been discussing what may be called fancy. Chance association and personal feeling control the mind, and the child is more or less conscious of the unreality of his mental rovings. We find a different state of affairs, however, when we turn to invention. The account of this will follow Baldwin. Let us go back, for the beginning of the child's inventions, to his imitations, and study the method of persistent imitation. In repeating a movement again and again, a child is constantly omitting some movements, putting in others, and so learning new ones. Now, just in proportion as a child gets skill in reproducing the copy that he set out to imitate, his attention can play about the movements he is making and introduce untried combinations, which result in something new or advantageous to himself. These changes may be accidental at first, but the sense of mastery that they give is a strong incentive to trying others, and so there is constant experimenting, modifying of old situations and stories, and intense enjoyment of the

Invention.

results. Baldwin gives as illustrative of the process an invention of Helen's. She began by copying with her blocks a church from her picture book. When she had it partly done, she saw that it could be altered a little and finished as an animal, which she forthwith did. This is typical of the inventive process, and is an important step in the child's development, because it teaches him that he has control over objects—that he is not limited to the mere imitation, but can make a new world of his own. From the teacher's standpoint, the close connection between this creation and imitation is important to note. The most imitative child may be the most imaginative.

When a child has made such an invention, the next thing is to show it to an admiring world, to get social approval, and this also is typical of all minds. If others will not accept his wonderful creation, if they criticize or laugh at it, he is forced to modify his enthusiasm of it—to change it so that it will meet with general approval and use. The possibility of using his invention in his relations with others is thus a child's final test of his creation, and a spur to new efforts. The desire to have control of the situation, or to escape unpleasant surroundings, doubtless underlies this.

Invention and lying.

Many so-called lies illustrate the same point. Baldwin gives another example here. Helen was bringing some packages to him from the hall and became tired before they were all brought in. She brought them more and more slowly and finally stopped before him and said, "No more." Now, as she became tired, Baldwin says, the thought of her delight when the task was finished and of the praise she would receive from her father,

became more and more prominent. With this was the consciousness that she would tell her father when she was through. From this consciousness it was a short step to the thought that by telling him at once that there were no more she would be praised and relieved. That is, simply to escape from an unpleasant situation, she invented a situation which would give her the desired results, without any sense of wrongdoing. Many of the first lies of children, where they are not purely imaginative, are of this sort, and should be carefully dealt with, because they grow into deliberate lying. They usually occur like this one, because they are of use to a child in some way. The best way to deal with them must vary according to the disposition of the child. He must in one way or another learn that social disapproval always follows such an act, because if people generally lied, social life could not exist. On the other hand, when he has done any kind of wrong, the treatment of him should be such as to induce repentance instead of fear, so that the next time he does wrong he will not be tempted to lie to escape punishment. Where there is confidence and wise government, the lie problem will not be so pressing a one as where there is fear and too great restriction. To prevent lies, then, there should be cultivated most carefully in a child the courage to take the consequences of his acts, and the confidence that he will always be justly treated and understood.

Finally, we come to the most practical use of imagination that any of us make—the planning of our career. About five thousand children have been questioned as to what they would like to do when they are grown up and what part they would like to take in the

life about them. The close connection between imagination and imitation is seen here. The occupations are necessarily chosen from the lives that the children know, and out of the whole list suggested the boys mention two-thirds to three-quarters of the entire number. As one girl puts it, "There are not many things for a girl to be."

Ideals, hopes and ambitions.

The following table shows the occupations mentioned most frequently. Where two figures are given, they show the variation between different reports; where but one, agreement or but one report.*

Occupation	Boys	Girls
Teacher	3– 4%	38–45%
Dressmaker		19–24
Milliner		19–24
Music teacher		6– 8
Musician		0¾
Artist		0– 3
Housekeeper		3
Nurse		0– 2
Servant		0– 6
Wife and mother		0¾
Missionary		0– 0¾
Factory hand		0– 0¾
Bookkeeper	0– 3	0– 2
Typewriter		0– 1
Clerk or stenographer		2–11
Trades (Taylor's estimate, 1490 boys)—		
Engineer	11	
Carpenter	4	
Blacksmith	4	
Machinist	1	
Merchant, business man or storekeeper	18	0– 2
Farmer	6	
Minister	21	8
Doctor		
Lawyer		
Sailor	21	
Railroad man	21	

*The table is based on the figures of Taylor and Monroe, with some data from Chandler and Darrah.

This table represents the average for all ages, but we find certain changes in choice between seven and fifteen that should be noticed. Thus the choice of teaching varies from 41 per cent at seven years, and 58 per cent at nine years to 20 per cent at eleven years. Milliner and dressmaker choices outnumber those of teaching at thirteen and fourteen years and only then, pointing to an increased interest in dress.

With boys, trades seem to be the most popular between seven and nine and clerkships between ten and twelve. The choice of a business career appears at eight, that of a sailor's life at nine, and both increase slowly, but steadily.

These variations in the choice of profession at different ages are shown in more detail in Mr. Jegi's table of two thousand eight hundred poor German children. The table is given in per cents.

Boys

Years	8	9	10	11	12	13	14	Total No. Choosing Father's Profession
Carpenter ..	21%	26%	22%	22%	17%	10%	6%	113
Merchant ..	19	11	16	13	7	12	15	67
Bookkeeper	0	10	11	15	5	15	23	3
Farmer.....	13	12	9	15	9	10	18	14
Engineer...	3	11	8	9	20	10	10	14
Machinist ..	2	4	2	4	7	18	23	4
Clerk.....	3	6	1	10	13	12	12	17
Fireman....	9	8	18	8	4	2	4	6
Sailor.....	2	7	9	4	12	6	12	1
Officer	3	9	10	6	5	10	8	2
Soldier.....	10	10	8	9	8	2	2	0

GIRLS

Years	8	9	10	11	12	13	14
Clerk	17%	22%	24%	19%	25%	35%	16%
Teacher	88	91	64	63	77	33	32
Dressmaker	27	91	36	57	48	63	21
Housekeeper	56	34	32	32	28	22	14
Music teacher	0	3	12	12	12	27	11
Milliner	8	7	4	10	10	8	9
Bookkeeper	1	0	4	12	3	7	22
Typewriter	0	2	2	8	3	7	11

The reasons for choice may be given as follows:

	BOYS	GIRLS
Like it	18%	25%
Fitness for work	0	5
Money	24	15
Easy	4	6
Philanthropy	5	9
Parents' or relations' occupation pleasant	1	0
Demand for this work	3	0
Pleasant	4	7
Opportunity for travel	2	1

As Mr. Monroe gives the table it is:

	BOYS	GIRLS
Like it	30%	44%
Money	44	24
Easy	12	14
Philanthropy	6	7
Parents' or relations' occupation pleasant	3	2
Miscellaneous or no answer	5	9

Both tables agree in emphasizing the importance of the child's liking and his desire to earn money in deciding his choice. Indeed, the desire to earn money is so prominent that we can not but believe that our

This tendency is influencing our children far too much. we find it is dreadful that as many children, not adults but *children*, should feel the need of earning money, as feel free to follow their own liking. Indeed, the most marked feature of all those observations is that so few of the children go beyond the range of the commonplace in their choice of a life work. The shades of the prison-house have already closed about them. They do not feel free and conscious that the world is theirs for the choosing. Most of them look forward to a life of hard work—household drudgery or ditch digging. Are they not loaded with the burdens of adult life too soon?

fifth. The money motive.

Money is the strongest motive for choice at every age from seven up to fourteen, when the adolescent asserts himself and chooses a profession because he likes it, or because his father or uncle is so and so.

Mr. Jegi's figures of the German children, however, show that most of them, while choosing a humble profession, choose it because they like it, and that the money motive decreases instead of increasing with age.

The desire to earn a living appears at the age of seven, and this motive, growing in definiteness and determining the occupation, such as teaching, because it gives good pay, increases until it makes 25 per cent of the choices at the age of twelve.

Other motives.

There is also a growing appreciation of the disagreeable side of all work, and of the demand for each sort.

Altruistic motives are not prominent until the eleventh year, when 10 per cent of the choices are determined by the desire to help support the family. At twelve, plans to help the poor, to convert the

heathen, etc., appear, and rise to their highest point at fourteen.

In observations upon four hundred and fifty children from kindergarten through eighth grade, Misses Sheldon and Hamburgher found a marked difference between the character of the wish for the present, and for the future when they were grown up. Contrary to what we should expect, 16 per cent chose the improbable for the present, but only one-eightieth of one per cent chose it for the future. The contrast is very funny in some cases. Thus one child, if she could have her wish, would be a rose in a garden to-day; but when grown, a teacher; another would be a bird now, but a dressmaker when grown; one boy of ten would be (of all things!) an angel now, but a doctor by-and-by.

Present and future desires.

It was also quite noticeable that when asked what they would choose for themselves and for another, they chose the more probable thing for self and let their fancy free on the other—bed-room slippers for self, and a diamond ring for the mother. Or is it possible that to the child the two things are on the same plane of values?

Why should a child choose the improbable for to-day, and become so matter-of-fact over the future? Is it because the futility of to-day's choice appeals to him so that he lets his fancy roam? It would be worth while to get returns from more children to see whether this difference is constant, and whether it is more marked with the older children than with the younger.

The character of the hopes which control childish acts is seen from another standpoint in an inquiry into children's motives for planting seeds. Among the boys, materialistic purposes increased from 56 per cent at

eight to 75 per cent at fourteen, and in the girls from 47 per cent at eight to 57 per cent at fourteen. Between eight and fourteen, the esthetic idea decreased among the boys from 50 per cent to 28 per cent and among the girls from 54 per cent to 44 per cent. Altruistic motives fluctuate in the boys, from 10 per cent at eight, and 25 per cent at twelve, to 15 per cent at fourteen. In the girls, on the other hand, they increase steadily, from 18 per cent at eight to 60 per cent at fourteen.

Esthetic and material ideas.

Considering the ideal person whom the child would be, we find that with little children his traits are borrowed chiefly from father, mother or friend, and very seldom from literature or history; while with sixteen-year-old boys and girls, historical characters lead, followed by those from literature, and a very few from among friends or parents. Washington and Lincoln are the heroes of both boys and girls, and the girls' ideals as a rule emphasize qualities essentially masculine.

The child's ideal.

The following table shows the most common ideal attributes and their influence at different ages, in per cents.

	7 Years	12 Years	15 Years
Goodness	25%	23%	22%
Goodness to self or class	27	4	0
Truth and honesty	4	9	10
Appearance	3	3	4
Striking quality	12	1	0
Feminine accomplishments	12	1	0
Intellectual power	3	10	12
Bravery and adventurous qualities	5	19	13
Discoverer of invention	2	1	0
Patriotism	0	6	19
Leadership	4	13	18
Wealth	10	0	2

Notice how the idea of a class goodness and the love of showy or striking qualities disappear in the older children. On the other hand the admiration of truth and honesty has far too small a percentage throughout.

The more general question of what children would choose to have for self and others, brought out this result:*

	Self	Others
Concrete things	$56\frac{2}{5}\%$	$70\frac{2}{5}\%$
Knowledge	$8\frac{2}{5}$	$\frac{2}{25}$
Health	$5\frac{1}{5}$	$3\frac{1}{5}$
Companionship	$8\frac{4}{5}$	$3\frac{7}{9}$
Happiness	$7\frac{7}{9}$	$4\frac{8}{9}$
Virtue	$3\frac{1}{9}$	$2\frac{2}{5}$

With age there was a slight increase in the choice of abstract qualities.

Now is it not a pity, that children and young people should be on the whole so prosy and confined to real life as these children are? We hear a great deal about the abuse of imagination, the danger of day-dreams and castles in Spain, and the moral obliquity involved in presenting fairy tales and myths to children. There is, of course, a real danger here, lest in playing with ideas, a child forget realities, but in view of this collection of ideals borrowed so directly from the everyday life of thousands of children, the danger of our becoming a nation of dreamers does not seem to be nearly as imminent as that of our becoming a nation of money lovers and materialists, satisfied with present conditions. Will

Use and abuse of imagination.

*Misses Mary L. Sheldon and Rae Hamburgher's unpublished data from four hundred and fifty children in the Chicago schools. The children were all from the "poorer districts."

children with such ideals ever become creators? Will they turn out to be artists, poets, inventors, or even signal successes in the conduct of any large enterprise? Hardly.

Instead of abusing the imagination by exercising it too much on useless things, we are abusing it by not employing it to raise and elevate our lives from year to year. There is no stronger power for good than a vivid and noble ideal. It is the air and water for the beautiful character that grows from the soil of prosaic surroundings. Even putting the question on practical grounds, no business can be successfully conducted unless the man at the head can imagine clearly the consequences of this or that move. He must be able to picture how his customers will like this new fabric; how he can best introduce it, and so on. Imagination, in short, is the pattern of the web of life. It is the shaping force without which the universe would be a chaos. We should say then, that abuse of the imagination is possible only when images do not finally turn back into our life and change it in some way. With this one limitation, we can not encourage the free use of images too much.

Training of imagination.

We have already seen that imagination is based upon memory images. In proportion as those are clear and distinct, will the material of imagination be easy to manipulate. There is, however, no reason for using this material and so setting imagination to work, unless a child's curiosity is roused by something that he does not understand. When he asks himself a question and sets about finding the answer, imagination begins to work, and it may end in an invention like the telephone; a theory like the

nebular hypothesis, or a picture like the Sistine Madonna. The necessary thing in all cases is the arousing of a keen curiosity or interest, which is permanent enough to keep the questioner at it until he has an answer. To cultivate the imagination, therefore, cultivate far-reaching enthusiasms and interests.

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CHAPTER VIII

Conception and Reasoning

1. Notice:

(1) When the baby first connects sensations; *e.g.*, the milk with the bottle.

(2) When he first compares objects; *e.g.*, one face with another. **Observations.**

(3) When he first connects a present with an absent object; *e.g.*, the dress with the absent mother.

(4) When he forms a sequence; *e.g.*, the sight of his cloak suggests going outdoors.

(5) When he first adapts means to ends; *e.g.*, pulls the tablecloth to bring something within reach.

(6) When he first asks a question. How old is he? What is it? Does he follow it with others? How long is it before questioning becomes common?

2. Question children from three to eight years old as follows:

(1) What is the length of an hour, day, week, month, and year?

(2) See whether they know how much longer the day is than the hour, the week than the day, etc.

(3) How much do they think that they can *do* in an hour?

(4) At what age did they learn to tell time?
(5) At what age do they care to know the day of the month, the names of the months, etc.?

3. Ask school children to tell you what the things are that are named in Dr. Hall's list in the chapter on Perception, or in a similar list. These descriptions will show the imperfections in the children's sense experiences and the consequent imperfections in their concepts.

Development of reasoning power.

The nature of reasoning has been a subject which in the past has been hotly disputed. It has been considered the mark of man's divinity, a faculty implanted in him by the Creator, the special power of the soul or *logos*. Man, it was considered, has many things in common with animals, but his reason is the mark which puts him in a class by himself. It does not exist even in germ in the brute creation, while, when we reach man, we find it full-grown even in the child, as is also the moral sense. A child can therefore be held accountable even as a grown person is. In reaction against this evidently false theory, we find it assumed, on the other hand, that a child can not reason at all until he comes to comparative maturity—in the twelfth or thirteenth year at least.

With the development of genetic psychology, however, this has all been changed. It is accepted now as an unquestionable fact that the mental life is a gradual and unbroken growth from the cradle to the grave, as much as is the growth of the body. The infant mind must contain in the germ the possibilities of the highest reasoning. True, it needs the sunlight,

air, and water of favorable surroundings to develop it, as any germ does, but it is waiting to be developed, except in the few unfortunates who are born with the possibility of only a slight development.

Fruitful as this conception of regular growth has been in the other divisions of Child-Study, it has as yet been little used in the study of children's reasonings. Other traits are more characteristically childlike perhaps, and perhaps even yet the traditional idea of reason still holds an unconscious sway over us. However this is, it is certain that but little material is available on children's conceptions and reasonings.

Conceptions and images.

By imagination the child is freed to a large extent from time and place limitations in his combinations of ideas, and so can go on to combinations not duplicated in his own experience. In conception he finally goes beyond the individual in so far as he can frame an idea which applies equally to all individuals with certain similarities. In psychological terms, in conception for the first time we deal with universals or generals, while in perception, memory, and imagination we deal with particulars. In conception, the image in the mind is but a symbol for a large number of individual objects or ideas, much as, on a lower plane, the sensation in perception symbolizes all the other possible sensations from the object. When we think, for instance, of "tables," the idea that comes to our minds stands for round, square, oblong, four-legged, three-legged, and no-legged tables—all kinds of tables of all sizes, shapes and materials—the only common quality for them all being, perhaps, that they have flat tops and are used to put things on.

But, to turn it about, it is evident that such a class idea or concept is derived in the first place from sense experiences. Through our comparisons of perceptions or of images—which are derived from perceptions—we select the common qualities and combine them into a whole which can then stand for the class. Sometimes we select one object as a type, but even then we attend only to those qualities in it which all the other members of its class also have. It is but a symbol.

In forming a concept, then, certain steps are necessary: (1) perceptions or images of many objects; (2) comparison of these with each other; (3) selection of their common qualities; and (4) combination of these qualities into the class idea.

This is the case when the child's mind is sufficiently developed so that he can compare two objects or ideas; but even before then there is a kind of consciousness of classes which does duty for a concept and is very closely connected with organic memory and habit. We will begin, accordingly, at this point, and then see when comparison first appears, and when a clear class idea or concept.

First consciousness of classes.

In discussing perception, it was proved that by the third week the sight of the breast called out movements toward it for nursing, and that from the third month on, recognition of objects increased very rapidly. It was noted that this was to a large extent due to organic memory, and not to the presence of memory images. At this stage, therefore, a baby can not compare a present with a past experience, and only with difficulty two present ones.

This first recognition goes into few details. Some strong impression appeals to the baby's senses, and any object that gives the same impression calls out the same reaction. Preyer's son showed a strong liking for white bottles of any sort, like his milk-bottle. Babies at first usually treat all men as they do their father, unless there is some striking peculiarity. If the mother remains much with the child, she is kept in a class by herself, but otherwise it is not at all uncommon for the baby to act toward all women as he does toward his mother.

In such cases, there is a recognition by means of organic memory of certain prominent characteristics, and there is a responsive movement of some sort. The first concept, is thus, according to Baldwin, a habitual response to a certain stimulus.

The first comparisons.

We may say confidently that the possibility of comparison is not present at birth, for the various brain centers have then no fibers connecting them. During the first nine months, however, the brain increases more in size and in connections between its parts than at any other period of life, so that we may expect to find comparison by the ninth month, and in all probability considerably earlier.

When we speak of comparison, we simply mean noting the relationships between two objects or ideas. The two things must both be included in one mental act. Even if two *objects* are compared, then, it is evident that there must be at least enough memory to remember the first object while examining the second. Miss Shinn records the first memory and the first comparison at the same time, in the beginning of the third

month, when her niece studied her and her mother alternately, for some time, turning her head from one to the other and examining them both intently.

Perez gives what is clearly a case of comparison, although he does not seem to be sure of it, in describing an eight months' old boy's experiences with two cats. The boy was playing with one cat when another cat of the same size and color entered the room. Suddenly the child caught sight of it and apparently could hardly believe his eyes. He stared at it and then at the first cat, his body tense with attention and astonishment. He examined the two until he became satisfied that they really were two different things, though so much alike.

It seems probable from our knowledge of the growth of brain fibers and of the rise of memory images, that comparison begins in a feeble way in the third month. As soon as a child begins to speak, we have certain and numerous evidences of the similarities that he is constantly seeing between objects. All white animals of a certain size are "lammies"; all black ones, "doggies." The hairless doll is "Grandpa." Men without beards are boys even to the four-year-old, and the ten-cent piece is a baby dollar.

We see comparison clearly when Mrs. Hall's child, at eight months, recognizes the real dog from the image on the mantel; when Preyer's boy, at about one year, compares his father's face with its reflection in the mirror; and in the case cited by Ribot, of the child who compared the ticking of the watch with that of the clock. We see here, as in the first class-consciousness, that only certain very obvious or interesting qualities strike the child's mind, and so his classification

by those qualities seems to us very funny or very pretty. We should add, however, that where there is a strong interest, the comparisons of a four-year-old child will average favorably with those of an uninterested adult.

We have no data to show when a child first compares two *ideas* with each other.

We may best describe the baby's condition when comparison has fairly begun by summarizing Baldwin's account of the origin of the concept.

Origin of the concept.

The child begins with an indefinite and vague whole, which is both particular and general, percept and concept. Take for instance the pet kitten, the child's first experience with cats. The individual and the class are to him the same at this point. He knows no class but the individual. But he meets now a big cat of a new color. He may not identify it with the first cat at all, but the chances are that he will. Percept and concept now begin to divide—the two individuals are alike in some ways, so that both are called cats, and different in others, so that one is called Tiger and one Tom. Tiger scratches, Tom does not; but both are soft and warm and both purr. So his idea of a cat is a purring, warm, soft animal, that may or may not scratch. The next cat he sees may lick his fingers, and so, with every successive experience some qualities may be left out and others put in only as possibilities, until there is but a small nucleus of qualities belonging to all cats, and a large fringe of other characteristics that may belong to any particular Tabby or Tom.

The amazing thing is that the baby learns so quickly to distinguish individuals from each other, and yet, at

the same time, to put them together into one class, as things to eat, things to drink, rolling things, and so on. Experience is his only teacher here, but experience reinforced by pleasure and pain and by the natural impulses and instincts of the child is very powerful.

It is important to the baby's safety and comfort that he should learn thus speedily to distinguish and associate. Take, for instance, the cats again. He likes the soft fur and warmth, but he gets scratched by Tiger. Now for a long time he may be afraid that all cats scratch, but if he learns that only Tiger scratches and Tom and Tabby do not, he gets the pleasure of playing with them and avoids the pain of Tiger's claws. That is, to state it generally again, a baby that learns most readily the qualities peculiar only to an individual and those common to a class, is the baby that is the most independent and the surest of safety.

That the child's first concepts are incomplete is a foregone conclusion from what we have already said.

Incompleteness of child's concepts.

His experiences with objects are necessarily limited; he can not tell from the few people or houses or rivers that he has seen, which of their qualities are peculiar to them and which belong to all objects of their kind. When we add to this his imperfect observation and his small power of voluntary attention, we can see that correct concepts will be a late mental product. A child may have as wild an imagination as an adult, but an imagination that attends to universal and real qualities, as conception does, is obtained only by long experience and training.

The child's concepts are therefore too general in some cases and too particular in others. He does not put into the concept all the qualities that it ought to have, as in thinking that all white things are milk; or he puts in wrong ones, as in thinking that all rivers are dirty; or he combines both errors, as in thinking that blackness marks off dogs from sheep.

We can, by a little adroit questioning of children, see all these errors in their concepts of common classes of objects, such as tables and chairs and people, while with the still more abstract concepts, such as number, distance, growth, time, and the self, the errors are all intensified.

Concept of number.

The baby's ideas of number are vague in the extreme; number in the abstract does not, of course, exist for him. He knows only many things or this one particular thing. At eighteen months Ribot says a child can distinguish concepts of one, two, and several. Dewey also notes that three children observed by him, varying in age from sixteen to twenty-eight months, paired off objects. Two could be counted but not three. At three years, Ribot says, a child can distinguish 1, 2, and 4 or 2×2. The baby's first vague impressions of quantity and mass are made more distinct through his own movements in touching and handling objects, and he is also aided by the regular alternations and rhythms in his experiences and in his bodily reactions. We know that in his first counting a little child is very likely to touch or tap as he counts and that he likes to group the objects or words in counting by pronounced accents. He enjoys singing the multiplication tables, for instance. We must also distinguish, with the little child, between

repeating number names, and real counting. A child will often apparently count to a high number, but when asked to show ten objects or twenty objects, he will be at a loss. Not infrequently a child takes the name of the number for the name of the object. If, for instance, the third object happens to be a willow rocker, he may think it a "three."

When a child has really learned to count, he delights in it, both counting the objects about him, and merely counting, without reference to particular objects. The boards in the sidewalk, the blades of grass, the stones in the road, are all enumerated, when he is not occupied in numbering up to hundreds of thousands, or to millions or billions.

Concept of growth.

At first, the child's idea of growth is simply that of increase in size. It does not include the idea of increasing complexity of the parts. To the childish mind, a stone may grow as readily as a child. Mr. Sully has some speculations on childish ideas of growth which are interesting though, perhaps, not so general in their application as he believes. A child, he says, can not believe that things come from nothing or go to nothing; hence the natural idea of a cycle, babies growing to men, and men growing back to babies. Babies, a child is told, come from various places, heaven among others. He knows that they get larger by eating and drinking, and that after a time they stop growing and begin to shrink. Old people are frequently small, they are spoken of as childish, and when they die they are carried to heaven by the angels, hence they must grow still smaller after they die. I myself have never come across this idea, and I doubt whether it is a common

one. Most children are satisfied as to the origin of an object by being told where it comes from, without questioning further the source of the place.

As in the other cases, the first idea of self is obtained probably from a child's own feelings as he touches or sees himself and moves his body involuntarily. This touch is different from the contact with other bodies, because there are two sensations instead of one, touching and being touched. By degrees, the child learns that his arms and legs belong to him, *i.e.*, that he gets pleasures and pains from them, but he does not seem to identify them as closely with himself as he does his body. This is shown in some examples given by Sully—one child saying that his legs get in the way of himself. Another thinks that his stained feet are different from the ones he had in the morning.

Concept of self.

The odd ideas that children have about their bodies and the uses of the various parts are excellent illustrations of their attempts to straighten out all the strange things that they come across.

At first the child's only sense of self is of his body, but after a time he begins to distinguish himself from his body. As far as I know, no extended observations have been made on how the transition comes about. We know that in the race history, it is effected through dreams, shadows and echoes, and we have isolated cases in children, like George Sand's, where the same thing occurs. When the child uses "I" and "me" instead of his name, he seems to have arrived at this idea.

Of course a baby's first ideas of particular distances come from his own experiences in grasping and

creeping. Distance means the length of his arm, or the amount of creeping or walking that he does to get to an object. Feet and miles mean nothing to him until he is able in some rough way to reduce them to his own efforts in walking, reaching, or seeing. He puts together certain common factors from many experiences and thus gets a crude concept of a foot or a yard or a mile. But accurate concepts are slow to develop, for even grown people have imperfect ideas of a mile, and when it comes to five or ten miles, we take to measuring the distance by time. A place is fifteen minutes' walk, or half an hour's car ride away.

Concept of distance.

This, however, probably means as little to a child as the space measurement. We all know how confused to a small child are the lengths of month and year, of hour and minute. A child of three often has great difficulty in understanding yesterday and day before yesterday. The time when his mother was a little girl was many years ago, at the same time when Caesar and Heracles lived.

Concept of time.

We have no data to show when children first get time concepts that are at all adequate, and the case is much the same with regard to other concepts. We know that, generally speaking, a child has developed beyond the gross inaccuracies by the time he is fourteen, but we know nothing of what classes of erroneous concepts are corrected first and what linger latest. There is room for much observation here.

If it is true that a child's ideas of a class depend upon his experience with objects of the class, then it is evident that the first step toward getting a correct

idea is to give many objects with which to get acquainted. A child who has seen only one dog, can not know as much about dogs, other things being equal, as the child who has played with several. A child who has seen but one river has a more imperfect idea of rivers than a child who has seen many. Of course, by far the best way is to show the children the actual object, but if this is impossible, pictures do a great deal, especially pictures that differ in minor details but agree in essentials.

Forming correct concepts.

It is hardly enough, however, simply to put the various objects or pictures or ideas before the child. He should be led to judge whether the differences are so great that the objects can not be put into one class. The degree to which this comparison is carried out must be decided by the teacher. Kindergarten children notice only the more striking likenesses and differences, but in the ninth year a great awakening occurs.

Such comparison is quite as important as having many objects because it means, once more, the forming of associations which bind the child's world of thought into a whole, and it lays the foundation for the systematic reasoning which occurs in later life.

We have already answered indirectly the question of whether general ideas can exist before language. It seems unquestionable, from the way that a child acts toward objects that are alike, that he does have some class ideas before he has learned to speak.

Conception and language.

On the other hand, there can be no doubt that language facilitates the formation of concepts because it provides a convenient form in which to keep the idea. Then, too, when the baby learns to speak, the great

widening in his ability to get what he wants is a powerful stimulus to mental activity, and to the naming of things.

The first questions are usually about what things are, and this often means only what their names are. The fact that this thing is a "dictionary" is itself satisfying enough to rest in for some time. Some children seem to have a mania for learning the names of objects; they seek for the Christian name of every fish and insect and leaf, and when the wearied mother tells them that there are no such names for them, the child in pity christens them himself. Some anthropologists see in this a survival of the early worship and fear of the word as a living thing. The Scriptures tell us that the Israelites dared not pronounce the true name of Jehovah; in the Middle Ages, it was believed that there were words whose potency was sufficient to summon all the powers of evil to the aid of the bold man who spoke them; and so, in the little child's satisfaction with a name, there is perhaps an implicit belief that it has a certain force of its own.

For a long time a child is at the mercy of verbal sounds, mistaking words for others that sound like them but are spelled differently, or getting the wrong word. We all have some choice examples of this. Here are two: One child sang lustily,

> "Dare to be a spaniel (Daniel),
> Dare to stand alone,
> Dare to have a purple spine (purpose fine),
> And dare to make it known!"

Another one, when asked by her father what she had learned in Sunday school that morning, told him earnestly that the minister said that "he must put his

trousers in heaven, where the moths could not get at them!"

However, when a child begins to question what things are *like*, the question of what things *are* begins to mean what they are like.

Imagination and reason.

The period before nine when all the quaint, childish fancies that so delight us control the child, is especially the age of imagination. The odd comparisons between familiar things, the imagining of a situation that may have led up to present conditions, are fancies, but they are also attempts to make the world a unified and reasonable one. We have seen that the child's first class idea is the same as his idea of the individual, and is separated from it only through varying experience. So his first reason is an image or a craving, as is also the reason of many adults, and takes the form of logic only with a later development. When we ask a child *why* he did this, it is hard for him to say, because his reason is probably only a desire, a picture of himself enjoying a certain thing, and it is hard to put this into words. "Because," or "Because I wanted it," is as far as he can go.

Conception and reasoning.

In reasoning a more developed form of thought than a conception is reached, for in it the relations which were taken for granted before are now stated. The concept of table includes the ideas of a flat top and of usefulness to put things on; but the reasoning about tables, expounds that this is a table *because* all tables have the same qualities that this has. We recognize clearly now relations that before have either been unseen or only obscurely seen.

Reasoning takes three common forms—the tracing of a particular cause to a particular effect; the discovery of a law or truth or system from observation of particular facts; and the classifying under an already known law the facts afterward observed. We will consider the child's reasoning under these heads.

Reasoning from cause to effect.

Throughout all the child's thinking, as in his imagining, he works from a personal world to an impersonal. His first ideas of cause and effect are doubtless obtained from his own movements and their results, and the sense of power appears to have its rise with the first volitions or persistent imitations in the period between four and six months. During this period the child seems to be experimenting to see what he can do. He repeats and varies a movement *ad infinitum*, discovering the possibilities and limitations of his movements, and at every step connecting a given movement with a certain objective result. Thus he learns that he can always get certain things by doing certain others, and has the feeling of himself as a power or cause. In all his experiences, he and others like him are, more than anything else, the causes, or movers of things. He sees very little of impersonal natural causes. This strengthens what seems to be his instinctive tendency to refer all results to a personal cause. As Sully puts it: "He starts with the amiable presupposition that all things have been hand-produced, after the manner of household possessions. The world is a sort of big house where everything has been made by somebody, or at least fetched from somewhere." "To ask *who* made the animals, the babies, the wind, the clouds, etc., is for him merely to apply the more familiar type of causation as the

normal rule." One three-year-old girl thought that when the water spurted from the faucet, it was choking because it coughed. One child of four years thought that *running* water was alive; and another, that windmills were alive because they moved. Most small mothers think that their dolls or pets must like the same things that they do themselves.

Observations have been made upon kindergarten children to ascertain when they first asked "why." It was found that all children had asked "why" before the third year, and 75 per cent of the boys asked it before the second year. The first real interest in the idea of cause, however, is not usually shown by the *first*, "why"; but appears between six months and a year later in 70 per cent of the children.

The objects which call out this first question vary considerably in boys and girls, seeming to point to certain differences in the natural interests of the two. Thus 75 per cent of the boys' questions relate to natural causes, while only 30 per cent of the girls' do. Such questions as, "Why does it grow dark?" "How does God make it thunder?" fall here. Fifty per cent of the boys ask questions about movements, such as "Why do wheels go?" "Why do horses run?", while only 25 per cent of the girls are first interested in movement. Twenty-five per cent of the boys are curious about the adaptation of structure to function: "Why do birds have wings?" "Why does Towser have four legs and I only two?" The girls have little interest in this.

On the other hand, the girls ask more first questions about God and Christ, and about domestic affairs. Both boys and girls always show great persistency in

following up a question with others until a satisfactory answer is obtained.

Along with this idea of personal cause goes the other idea, that everything has a purpose behind it, and so we find children ready to believe that the sun rises for them to get up by, that the flowers grow for them to pick, that the rain is trying to plague them, and so on.

Idea of purpose.

We can realize how deep in human nature lies this tendency to make man the center of all things, when we find the earliest men, the savage races of to-day, and even the civilized man himself doing the same thing. I fancy that there are few of us who have not at some time been thoroughly angry with some object or material that we could not control as we wished. In early times inanimate things and animals had legal punishment meted out to them as to persons.

In these first experiences, what reasoning there is, is usually only an association of one thing with another. Thus the child who learns that the father gets home and then supper follows, may reverse the procedure and suppose that getting supper ready is the cause of the father's arrival.

Reasoning by association.

The assertions that the object of Thanksgiving is so that we can have turkey, and of Christmas so that we can have presents, combine both forms. Little by little, the child is forced to discard a personal agency for a simple sequence of events, and so he seems to become less imaginative.

Of cause in the sense of reason, he seems to have little idea as yet. Sequence and analogy of sequence govern his thought. Mr. Brown gives numerous

instances of this. Thus one boy would be a minister so he could have the money from the collection boxes. One little girl said she was a woman now because she had a butter plate given her instead of having her bread spread.

Preyer's boy in the fifth month first connected movements with the following noises: the tearing of paper, the jingling of keys, the opening and shutting of a drawer with the accompanying sound. He would strike a spoon against a plate, listen, and then repeat it as if trying to see where the sound came from. His delight in producing such results was at its maximum during the tenth month, and Preyer believes this indicates the knowledge that he was an agent or cause. But even then he had not learned that objects, when dropped, fall to the ground, and gaped with astonishment to see them go.

By degrees, however, definite sequences are established, and then occurs the reasoning which is so ludicrous to us and so sensible to the child.

Establishing of sequences.

One child thought that a person with gray eyes must be old. Another of three years and three months thought that a card lying on the floor was the cause of the sewing-machine not going, because when his mother got up to pull the machine out from the wall, she first picked up the card from the floor.

Analogy of sequences is seen in such cases as these: One child of two and a half thought that her baby sister only needed larger shoes in order to walk; another, that her eyes were bright because the sun shone into them as into a room; another of five, that men are filled with sawdust, like dolls; a boy of five, that standing in the rain until he got soaked would

make him grow fast, as it does seeds, so that he could wear "pants!" One girl of six, when told that gum was grease and was not good, reasoned thus: "Lard is in doughnuts, lard is grease. It's good!" and continued chewing. A boy of five reasoned that thunder was made in heaven in the same way that sounds are made in a sawmill. A girl of seven was afraid to eat apple seeds, lest they grow up to trees. Another wondered why, if she were dust, she did not turn to mud when she drank water. One girl thought her brother pale because he washed so much. Then, too, there is the little boy who thriftily planted his dime to have it grow, and another who planted bird seed to get more birds and sardine cans to get more sardines. Again, one boy thought his mother could round some pieces of cloth better if she had a poker to use as the motorman uses his to get around a corner. The small boy who had lost a tooth and thought the new tooth of his baby sister must be his, is not alone in his reasoning.

Such examples show us how vague the child's ideas are. He has to learn that balls will roll away if his hands let go of them; that he can use his hands to move things, and so on. When we consider that a child begins life with no knowledge, we must admit that to learn so much in the short space of a year he reasons much instead of little.

This purely temporal relation of one event to another, if it be a constant one, gives to the child his first idea of law and order. In his contact with nature, he experiences certain fixed sequences, such as the seasons and day and night. In his contact with people, and in the ordering of his daily life he should find the same thing in all

Idea of law and order.

cases where his mature mind will later justify the order by reasons. Just in proportion as we, his elders, arrange our lives and his according to an order controlled by laws, shall we help him to untangle the essential from the unessential.

Plato in discussing the proper education of youth, makes the point that we can not get citizens who are obedient to law in later life, unless we have trained them to a respect for law in childhood. Now, what Plato says of civil law is equally applicable to law in its widest sense. The child who is given meals at irregular hours, who is never trained to habits of bathing and cleaning the teeth, of sleeping, and so on, will never have a respect for the laws of his body. If he is trained to the fallacy that he can eat and drink just as he pleases, without bad results, that he can sleep or not and feel just the same, that he can bathe or not, and still be clean, he can not have the belief in cause and effect that the child who has been taught to observe regularity in all such things has. Order or regularity is the same as law to the little child; and to primitive peoples also custom, or the usual way, is the law. The reason upon which this law rests becomes apparent only later. Hence it is our part to see that children acquire habits or customs of orderly acting and thinking, customs which need not be disturbed when reason passes them in review. So shall respect and obedience to law be a work of love and not of duty.

To many it will probably seem rather pretentious to class the modest efforts of children to make their world into a connected whole under inductive reasoning, which is the method of scientists. But precisely

because the two are not usually associated in our thought, we wish to unite them here. The child mind is trying, though spasmodically, to reach to a system of thought. He does not like to live in a chaotic world, and although his efforts to produce order are greatly limited by his inexperience and by his undeveloped power of attention, the desire for unity which impels him is the same as that which impels the scientist.

Inductive reasoning or attempts at system making.

In discussing the child's thoughts about nature, Sully says that we can see some crude attempts to form a system and to get back to the first cause which will explain all else. In what little we know of the child's naïve thoughts on this subject we are strongly reminded of the speculations of the early philosophers. The child, too, wonders who made God; who were the first people and who took care of them when they were babies; where the first hen came from, and so on. The child, like the race, seems first to ask "why" and only later to become interested in "how" and satisfied with it.

When he comes to frame his cosmology, things are taken for what they seem. The earth is flat and the sky round; the stars and the moon shine through holes in the sky and are lamps for God or the angels. Natural phenomena like thunder and lightning, storms, wind, etc., are caused by God for some definite purpose of His own.

Most children have some such imperfect system, which they fill out from time to time in detail. Thus one boy of six after watching the smoke rising from a locomotive said he knew now that smoke made the sky. This was not so bad for a city-dweller.

The consistency of these childish reasonings is a subject on which we have as yet few exact data. Earl Barnes assures us that it is difficult for a child to hold a whole subject in his mind because his thinking is fragmentary. In drawing the story of the "Three Bears," for instance, a child will often forget the story in his delight in drawing the bears, and will fill the paper with bears and nothing else. This is doubtless true to a certain extent. We have already seen that the little child's interest is an immediate one, and that he does not clearly distinguish means from ends.

Consistency in reasoning.

Still, we must not suppose that a child sees no connection between cause and effect, and does no connected thinking. Observations made by Miss Lillian Clow seem, on the contrary, to show that when children have once made an assumption about an object, they hold to that fairly well in the rest of their thinking about that object.

Miss Clow* collected data from 360 children, 40 of each grade from kindergarten through eighth grade, in order to see how their reasoning changed as they grew older. She selected a sea porcupine as an object with which the children were unfamiliar, so that their reasoning would not be directly influenced by their knowledge, but which was yet striking enough to arouse curiosity and stimulate thought. This was shown to the children and they were asked these questions among others:

1. What does it look like?

*Unpublished data from Chicago school children. The object was a beautiful specimen of a sea porcupine. The tables are given in per cents.

2. What do you think it is? Why?

3. Where did it come from? What makes you think so?

4. If it moved from one place to another, how did it go?

The following tables show the answers.

Question 1	Kg.	1	2	3	4	5	6	7	8	Total
Fish	15	37½	40	47½	52½	85	50	52½	27½	45⅛
Porcupine	0	2½	17	22	15	7	42	15	42	18
"Porcupine fish"	0	0	0	7	0	2	0	10	0	2
Miscellaneous	77	55	37	17	27	5	7	17	30	31

Question 2	Kg.	1	2	3	4	5	6	7	8	Total
Fish	17	52	57	57	62	87	65	85	80	64
Porcupine	0	5	25	20	25	7	25	2	12	10⅝
"Porcupine fish"	6	0	0	5	0	2	2	10	0	2
Miscellaneous	62	37	12	12	10	2	7	2	5	17

Question 3	Kg.	1	2	3	4	5	6	7	8	Total
Sea or ocean	2	22	40	40	45	75	37	77	65	45 } 63⅞ =
Lake, river	15	30	42	25	20	12	10	2	10	18 } Water
Geog. place	2	2	7	5	2	12	42	17	22	12⅞
Miscellaneous	67	40	10	25	27	0	10	2	2	20⅝

Question 4	Kg.	1	2	3	4	5	6	7	8	Totals
Swam	17	47	70	57	67	87	65	87	77	64
Crawled or walked	25	15	12	30	10	2	20	5	5	11
Rolled	17	12	10	12	10	10	7	2	12	10

One of the interesting things in these tables is to see how the per cent of miscellaneous answers decreases from the kindergarten up. Whereas 69 per cent of the kindergarten children give such different answers that

they can not be classified, only 5 per cent of the fifth grade and a somewhat larger number of the eighth grade do. This seems to show the effect of the interchange of ideas in training all children to similar habits of thought so that they reason in much the same way even on new subjects.

In discussing the consistency of the answers, we see how well the children hold to a standard that they have chosen. Thus if a child says in the first answer that the strange animal looks like a fish and is a fish because it has little fins, and that it will live in water, and swim, he is thoroughly consistent throughout with his first assumption that it was like a fish.

Deductive reasoning or classifying by a standard.

The answers to the first three questions were clearly consistent in 51½ per cent of the individual papers, and clearly inconsistent in 16½ per cent. In the remaining cases the child's thought seemed confused. These per cents were distributed as follows:

	Kg.	1	2	3	4	5	6	7	8	Totals
Consistent.....	28	26	61	53	44	72	74	82	78	51
Inconsistent....	10	16	20	23	18	19	19	13	17	16

We should hardly seem justified from these figures in concluding that even the little child's thought is *predominantly* fragmentary. It may be true that the systematic questioning made the children relate their answers more closely than they would have if left to themselves, so that the percentage of consistency may be a little higher than it should be; but even so it would seem that a child's thought is not so much inconsistent as it is incomplete.

The improvement in consistency from 28⅓ per cent in the kindergarten to 78 per cent in eighth grade is very marked, and is closely paralleled by Mr. Hancock's observations on reasoning about numbers. They show an improvement from 40 per cent of correct reasonings at the age of seven years to 86 per cent at fifteen.

Experiment with arithmetical problems.

Mr. Hancock experimented upon one thousand children from seven to fifteen years old, to find the rate of increase in ability to reason on arithmetical problems. He gave problems with such small numbers that no difficulty could be experienced in using them, making the entire difficulty one of reasoning. He found that the errors decreased from 60 per cent with the boys at seven, and 63 per cent with the girls at seven, to 18 per cent with the boys at fifteen and 21 per cent with the girls. From the seventh to the eighth year, there is an increase in the number of errors, for both boys and girls, followed by a rapid decrease at nine, and a still greater decrease at thirteen and fifteen; but at fourteen the boys make almost as many errors as at twelve. The boys are slightly better than the girls except between seven and nine, and at fourteen. The greatest difference is in the period between eight and nine, when the girls are 8 per cent to 11 per cent better than boys. From the eleventh to the twelfth year, the percentages are nearly equal.

Notice how closely these variations in reasoning follow the variations in growth that we have already traced, the periods of lessened ability to reason coinciding with those of rapid growth in height; those of greater, with increase in weight.

A simpler form of deductive reasoning is seen in the adaptation of means to ends, as when the year-old child pulls the tablecloth over to bring a dish within reach, or climbs into a chair for the same purpose. Or when the three-year-old feigns a cough in order to get some cough drops. A more elaborated form is seen in the boy of four who wanted to get a bone from a dog. When he found that he could not catch the dog by chasing him, he got a stick and brought it to the dog to smell. In smelling, the dog dropped the bone, and after one unsuccessful trial the boy got it. Akin to this is the thriftiness of the boy who, when given some money, bought some court-plaster "because I might need it some time." We have also the numberless plans to escape punishment. One little child scrawled the newly papered wall, and when confronted with a whipping by an indignant mother, appealed to her affections thus: "I just writed a letter to my dear papa. Ain't my papa lobely?"

Adapting means to ends.

The various examples brought together in this chapter show that while reasoning and conception are imperfect in children, nevertheless they play a prominent part in the child's mental activity. The account of them has necessarily been imperfect because so few observations have been made, but we believe, nevertheless, that enough has been said to show that the subject is well worthy a more careful consideration than it has yet received.

In considering what use parents and teachers can make of the facts given above, the problem of the value of children's questions presents itself first. There is a certain kind of questioning into which some children

fall automatically. They do not ask because they do not hear or because they want to know, but simply for the sake of saying something. Usually, if no answer is given them they wander on to something else, and from that to something else. Frequently they themselves know the answer to the question they ask. Such a bad habit can usually be broken by asking in turn of the child the question he has asked, thus making him realize how foolish or how thoughtless he has been. However, when a child waits for an answer, and persists in the question, he should be answered in as true and scientific a way as he can understand, and should be encouraged to ask more questions, instead of being repressed.

Educational bearings. Children's questions.

Wonder, or curiosity in the good sense, is the root of all love of knowledge, and it is one of the greatest discredits to our present school system that it is more likely to crush this tendency than to nurture it into the scientific spirit. The child who enters school curious at every point, overflowing with questions, and brimful of wonder and reverence at the mysterious things about him, becomes in a few years passive and quiet, a receptacle for any information that is poured into him, and blind to any value or beauty that it has. The teacher asks all the questions and he has to answer them. Seldom are the tables turned. Such a condition is very different from the ideal school, in which there is a constant give and take in question and answer between teacher and pupils, and where both teacher and pupils are learners. Both have doubts to settle, and can settle them best by a free discussion.

Again, we often do not know how to answer a child's question in a way that he can understand. When he asks why it thunders, or why the leaves fall off, it is puzzling to know what to say. Often, if we can cite some similar case, it satisfies him. If he has ever seen an electric spark, he will probably be contented to know that the lightning and thunder are just a big spark and the noise that it makes. Such an answer has the further advantage of connecting in the child's mind similar phenomena, and of forming the habit of looking for such similarities. Certainly it is useless to give the child superstitions about such well understood scientific facts as these. There is, however, the question of whether we should answer a child imaginatively or literally. Mr. Sully is authority for the statement that when a child is in the imaginative age between four and eight we can best answer such questions as why the leaves fall, by saying that they are tired of hanging on the trees. We can say that Jack Frost draws the pictures on the window-pane, and in various ways assume, as the child himself does at this time, that all causes are persons. In this connection we have also the much mooted question of whether we shall teach children to believe in Santa Claus and fairies.

There is, I believe, a point to be made here which sets a standard for the sort of answer to be given. It is certainly true that the child from four to eight years old lives in a world that is personal through and through, and that he delights in Santa Claus and fairies. Now, the point is this: Can we not answer his questions imaginatively, and still in such a way as to present the scientific truth, though not in a literal form? There is a certain truth in the statement that the leaves

are tired of hanging on to the trees, and that they drop off because they are old and weak. The child who has been told this goes on easily when he can to the knowledge of the changes in the leaf that dry it and let it drop off. The essential thing is to state the truth as nearly as we can, though in the imaginative form, and not to give a child the imaginative answer when he is old enough for the scientific one.

Cultivating reasoning.

Finally, to cultivate a child's reasoning powers, there is no better way than to start with his own question, and answer enough of it to give him the necessary information and the curiosity to think out the rest of the answer. Constantly suggest the question of how this fact is related to that: If leaves drop off because they are tired, why do not the oak and evergreen leaves get tired? Or do they get tired too? Why do the leaves come out in the spring? If lightning is an electric spark, why don't we use it in our houses, as we do electricity? Lead the child, through imitation and suggestion, to form the habit of questioning and of thinking out the answers to the questions.

Conclusion.

Conception and reasoning, like all other mental processes, are of gradual growth, and are to be found, in germ, even in the baby. The infant's class ideas differ from those of the adult in being vague, and in containing, as a rule, but few qualities instead of many. His ideas are also usually inaccurate, because based upon an experience with but few objects of the class, and those objects not carefully compared.

The first ideas of cause and law are derived from experience and refer both causes and laws to persons.

By degrees the idea is enlarged to include impersonal forces, and the reason.

In like manner number, space, and time concepts are applied at first only to particular objects, spaces, and times.

In all cases, the widening of the ideas is effected by the widening and comparison of experiences. The value of questions and of the habit of connecting as many events as possible is inestimable, therefore, in the formation of correct concepts and correct reasoning.

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CHAPTER IX

Religious Sentiment and Theological Ideas

Question the children on the following points:

1. God. Where is He? What does He do? Why can we not see Him?

Observations. (Borrowed from Earle Barnes.)

2. Death. Why do people die? Where do they go?

3. Heaven. Where is it? Who go there? What do they do there? What will children have there?

4. Hell. What must a person do to go there? What is it like?

5. Angels. What do they do?

6. Ghosts. Why are people afraid of them?

7. Witches. What can they do?

8. Prayer. Why do people pray? Why do they not get what they pray for?

9. Why do people celebrate Christmas? Why do they go to church?

Introduction.

In entering upon a subject on which there are so many differing opinions, a word as to the standpoint taken is necessary. The attempt is made here, as elsewhere, to state in an unbiased way all the facts so far reached by actual observation and questioning of children and adults, and to draw only what conclusions are warranted by those facts. The fundamental principle that the teaching of childhood largely determines the adult's belief is the idea which is here worked out in

detail. The close connection between physical and mental states also receives further emphasis from the study of religious phenomena, and we do not believe that religion is belittled by the acknowledgment of this connection, any more than natural science is. Rather, the necessity of religion is emphasized.

The attempt to sum up religious feelings, conversions, etc., in tables may also seem to some to be, from the very nature of the case, futile. It must be remembered, however, that these data are obtained from the individuals undergoing the experiences thus tabulated, just as were the data for imagination, memory, etc., and are reliable to the same degree. Doubtless more data are needed to corroborate those given, but equally are more needed to discredit them. They are simply contributions to aid in solving the difficult problem of religious instruction.

At the outset, it is necessary to differentiate certain terms that in common consciousness overlap or are confused. Morality, religion and theology are not identical, and yet it is difficult to separate them. The difference may perhaps be stated concisely thus: They represent three aspects of human nature—religion is the feeling or longing for unity, the feeling of sin, the consciousness of imperfection and the striving for harmony with the good. It is primarily emotional, not volitional or intellectual. Theology is the interpretation which the intellect gives; the formulating, or the explanation of this feeling of incompleteness and striving for perfection. Morality, again, is the code of action and the actual living toward perfection as we conceive it, the holding of right relations to our fellow-men and to

Morality, religion and theology.

God. Theology gives the mental content to religious feeling, and morality is religion incarnate. A man may then be religious, that is, he may have the religious spirit, without believing in any creed or dogma, and, indeed, so Mr. Leuba says, without believing in a God, if he has this active longing for perfection, for a better than he. His theology may be science or philosophy, or any kind of knowledge whatever.

If we accept this general statement we can easily see that theologies and systems of morality will vary from age to age, according to public opinion and the progress of knowledge; but that the underlying religious feeling, the striving of the self toward a better self, will remain as the source or motive of all our theologizing and moralizing. Marshall, indeed, maintains that there is a religious instinct, an inborn desire to reach beyond one's petty self, and that this is the root of all altruism—the emphasis of the race as against the individual.

Froebel also maintains that the germ of the religious spirit exists even in the baby, in the feeling of community and dependence between himself and the mother; and Baldwin, voicing the opinion of many writers of to-day, looks upon the religious sentiment as the highest outgrowth of the ethical and social sentiments. We can not, he believes, say properly that the little child is religious except as he is social. His first love, trust, and dependence, are directed toward the people about him. Only later, and by slow degrees, does he learn to transfer these feelings to an invisible God.

Religious spirit and social spirit.

In these relations to people, he is developing more sense (1) of his own personality, and (2) of that of

others. This latter phase is the important one for us at present and takes two forms:

(1) Ejective. The child constantly interprets others by himself.

(2) Projective. A person whom the child does not fully understand imposes requirements upon him, thus causing a feeling of dependence in the child.

In the religious sentiment, the first element gives content; the second, mystery and awe.

Thus we find that children interpret God, heaven, etc., in terms of their familiar experience, making, oftentimes, the most grotesque and bizarre combinations. God is a big man and Satan a bogie, heaven is a glorified earth, and so all along the line. The little child looks on father or mother much as adults do on God, and relying upon them for help, learns his first lessons in religious trust and faith. The constant comparisons of God to a father may have their root in this underlying relationship.

Child's images of God.

So, also, the child may look upon any person or thing that is very strong as a God. Sully quotes the case of a little boy of four years who, on seeing a group of workmen, asked his mother if they were gods, "because they make houses and churches same as God makes moons and people and ickle dogs." The idea of God is, at first, only that of a person more powerful than others.

As the child's mind develops, he comes to look upon father and mother as the all-wise to whom obedience must be given and from whom knowledge may be obtained, but who must also, on occasion, be deceived or propitiated. God is then the great lawgiver.

The question of whether a child left without any religious instruction at all would form an idea of God,

is difficult to answer, for all children hear more or less talk about religious matters. There is, however, a case of an uninstructed deaf-mute, M. d'Estrella, who formed for himself the idea of a "Strong Man behind the hills, who threw the sun up into the sky, puffed the clouds from his pipe, and sent out the wind when he was angry." It would be strange, indeed, if any reflective mind did not reach some idea of a cause of the world, and the first tendency is always to make the cause a person.

Effect of no religious training.

It seems very probable that children derive their religious ideas in part from the awe and reverence inspired by natural phenomena and from the inherent tendency to read personality into all unexplained events. This is one of the factors in the development of religion in the race which the child repeats in his growth. We have, however, very few data to show how strong the factor is in the modern child, and we may question whether his contact with people does not so overshadow his contact with nature that the social factor in worship is far stronger than the nature factor.

We have also one full account* of the theological ideas of a boy brought up without religious training, whose parents were opposed to current religious ideas, but who was accidentally informed of religious matters by neighbors and occasional attendance at church. It is interesting as showing the effect of early surroundings in as marked a way as the other records to be quoted later.

Bergen's account.

No religious instruction was given this boy and he was not told his parents' belief until fifteen years of

*Bergen's.

age; servants were warned not to speak of religious matters, no grace was asked at table, and all religious terms used in his presence were spelled. Naturally he became very curious to know what the spelled words meant. He first went to church to an Easter service when seven years of age, but did not understand at all the symbolism of the spring time resurrection. When ten years old, he went for the second time to a Catholic vesper service, at which he was impressed by a large painting of Christ. When twelve years of age he was encouraged to go to church, but showed great distaste for it.

He knew something about death even when three years old, but had no fear of it until eleven, when a physical shrinking, which he did not outgrow for several years, manifested itself. He was unable to conceive of the soul as immaterial at ten years of age, and hunted for it in all parts of dead animals. At twelve, he said that the resurrection could not have happened, for in respect to death people were in the same condition now that they were two thousand years ago. He grew very eager to read the Bible, because he noticed that people spoke differently of it from what they did of other books; but when a New Testament was given him, at the age of ten, he soon tired of it. At eleven, he explained the accounts of miracles as exaggerations of some real act of Jesus due to the repeating of it by one person to another.

When about fifteen years old, he admitted that there must be some force or cause back of the physical world, but he maintained that we had no reason to say that this force was a *person*, and that it was belittling to worship a *thing*; therefore worship was senseless.

In the case of children who receive the usual religious training, there is an unquestioning acceptance of what is told them up to the seventh year. Between the seventh and the tenth year there are some questions, and after ten, attempts to reason things out; this critical attitude increasing to the thirteenth or fourteenth year. The spirit of doubt first shows itself in attempts to place the responsibility for statements: as, "The Bible says," "My father believes," etc. Next come attempts to make the theological account square with actual life and with the child's own ideas of kindness and justice. The life of eternal song has not the attractions that life with a calliope or drum has. The injustice of sending the baby sister to hell fires leads to rebellion against the entire system. Still, on the whole, there is little questioning from most children.

Child's attitude toward religious instruction.

Starbuck,* who, with Barnes, has made the widest observations on children's theological ideas, finds the following factors in the child's religious life:

Prominent factors in religious feeling.

	Girls	Boys
Credulity and conformity	3.1%	5%
Doubt	5	5
Bargaining with God	4	2
God as talisman	5	5
God and heaven near	14	3
Love and trust in God	17	12
Awe and reverence	4	7
Fears	16	7
Dislike of religious observances	9	21
Pleasure in religious observances	17	7
Keen sense of right and wrong	22	15

*Starbuck's data include 330 children; Barnes's, 1,091.

We notice here as usual the unquestioning acceptance of statements made by parents, teachers, etc., noted also by Barnes. This Baldwin would doubtless refer to the child's feeling of dependence on parents. Again, the idea of barter, etc., and the feelings of love and reverence and fear amount only to 20 per cent and 14 per cent respectively. This, Hall thinks, seems to point to parents teaching that God is a sort of servant for the child. Barnes's papers show essentially the same thing. God and heaven are most common in thought; hell and the devil less so. The spiritual world is in the main pleasant, but is peopled with strange forms, doing unreal things.

Natural phenomena are hardly mentioned in relation to God. He seems to the child's consciousness wholly distinct from the world.

Children as a rule have very vague ideas about what God and Christ do, or what religious observance is for. One boy says God bosses the world, but usually they seem to think that the angels do the practical work. The relation of Christ to God is reversed in one fourth of the cases where He is mentioned, and in the majority of cases He is not even mentioned. The Trinity is spoken of by only two children out of one thousand and ninety-one.

Religious feeling and moral sense in the child.

The virtues which are most commonly considered necessary in order to get to heaven are: Being very good, keeping the commandments, believing in God, loving God, praying, etc.—all in the line of religious observance, and not at all of practical morality.

Children do not name teachers as the source of their ideas, but parents, church, pictures and the "hired girl."

If these reports are typical, it would seem that up to the age of twelve the child's religious consciousness consists, as a rule, simply of statements made by others and accepted without doubt; that the religious feeling is not yet separated from the feeling of dependence and mystery excited by parents and companions; and that the moral sense is only the sense of what custom demands. Shame is the shame of being found out, rather than of the doing of wrong, and the virtues possessed by the child are the result of imitation rather than of moral conviction.

Between the ages of twelve and sixteen, however, comes the great period of conversion, for this is the time when by far the majority of professing Christians join the church. If this does not occur before the age of twenty at most, it is unlikely to take place later.

Conversion: average age.

Starbuck's records show that out of three hundred and thirty cases in all, the average age of conversion for girls was between twelve and thirteen and for boys between fifteen and sixteen. A second period occurs between the ages of sixteen and eighteen. These cases are explained by the fact that many of those converted then had been partially converted two years before, but for one cause or another had become indifferent. The first of these periods, you will notice, is at the age of puberty, and it seems practically certain that the oncoming of maturity is closely connected with conversion. It is the time when the physical nature develops the necessity of another for its perfection, and this need would naturally be reflected in the mental and emotional life in every way. The vague mental longings and questionings

and unrests due to the rapid growth of association fibers in the nervous centers may be in large part satisfied by love of the ideal, and the hero-worship of which religion is one form. This close connection between mental and physical growth is shown also by the records of early conversion (71 per cent of women and 64 per cent of men). Such conversions are often due to overtraining or strong pressure (84 per cent and 73 per cent); but otherwise they seem to accompany early physical development (43 and 36 per cent).

Meaning of conversion.

Coming now to the meaning of the term, "conversion" properly covers all awakening to the demands of the higher life and determination to meet them, whether the change be sudden or slow. Most writers agree in the following:

1. *The sense of sin.* This is found in 17 per cent of revival and 20 per cent of non-revival conversions, with or without religious training. If we include in this the fear of God as the Judge, with the resultant fears of death and hell, we must add 15 per cent and 16 per cent more to each of the above, making 32 per cent and 26 per cent respectively. When the early life has been bad, this sense is, of course, more prominent, but it appears even when the worst sins are little faults. Professor Leuba says that fear is often taken for the conviction of sin, and that many such cases are complicated with bodily disorders—hysteria, etc., which add to the feeling. This period will be referred to again later.

2. *Self-surrender*—the yielding of self to the divine will. This appears in 10 per cent of the men and 12 per cent of the women. It is usually preceded by much mental depression and meditation. Often there

is violent resistance, wrestling with God, argument and doubt. This is much more prominent in men than in women—doubt registering with them 36 per cent as against 6 per cent in women. In a few cases this is followed by a determination to live a better life, but as a rule the order after self surrender is hope, trust, and love, culminating in

3. *Faith*, in 16 per cent of men and 15 per cent of women. The nature of faith has been much discussed by theologians, and we can not expect to settle what it should be. In actual practice, it seems, more than anything else, to be the feeling of oneness with God and good, and the conviction that He is to be trusted. It is entirely apart from intellectual conviction, and is not, as a rule, belief in dogmas. It is not reasonable or reasoned faith, but, rather, an emotional state. It leads directly to

4. *Justification*, and the sense of forgiveness, (22 per cent of men and 14 per cent of women), or the feeling of divine aid (10 and 6 per cent). Physiologically this is perhaps due to the inevitable reaction from the great nervous strain. We are speaking here of revival cases only. Any one who has seen a genuine old-fashioned revival can not doubt that mere physical fatigue has in some cases much to do with conversion. A woman, for example, worked up to the highest nervous pitch by her emotions, gives way, and an attack of weeping and laughing with consequent relief follows, which is interpreted by her as knowledge of God's forgiveness.

5. As the natural result, there is a feeling of great joy. The world seems to be newly made. The whole nature rises to a higher level, and in many cases (14

and 18 per cent) public confession and testimony to the power of the divine spirit follow.

6. The will is felt to be wholly powerless. The subject is carried on by a power outside himself. "Saved by the grace of God" expresses his state of mind. It seems to be to a large extent a struggle between conscious and unconscious factors, between habits which have passed below the level of attention and ideas which are as yet so vaguely felt as to be indescribable. It is again, perhaps, in large part the mental reflection of the bodily change—the opposition between the life of the individual and that of the race.

Between the two sets of forces the child's consciousness stands dismayed. He feels himself as clay moulded by forces far more powerful than he, forces not only without him, but within him—how can he feel otherwise than helpless, and what hope is there for him if not in God?

Let us now take up in more detail the studies of actual conversions.

Conversion and education.

In the first place it seems to be true that the nature of the conversion, for most people, depends to a large extent upon what is expected. Thus the denominations like the Methodist, that employ the revival method and teach the necessity of a sudden and absolute turning from sin, can show the most remarkable cases of reformation; while those like the Episcopalian, that look for a steady development of the religious life, are more likely to secure that.

Teaching, imitation, and social pressure in other ways, influence 42 per cent of revival cases and 37 per cent of non-revival cases. We do not mean to say

that they are the sole factors, but only that they are important ones.

Allowing, however, for preconceived expectations, we find that many who look for sudden conversion, and perhaps even desire and strive for it, are unable to attain it, while others get just what they expect.

Conversion and temperament.

Professor Coe's cases are not as numerous as is desirable, but he seems to have been very careful in collecting his material, so that it can be thoroughly relied on as far as it goes. He finds that out of sixteen subjects who expected conversion and were satisfied, twelve were in an emotional as opposed to an intellectual state of mind; eight of them had had hallucinations or motor automatisms of some kind, such as involuntary laughter or song, and many of them felt assured of special answer to prayer.

In another group, on the other hand, out of twelve subjects, who expected conversion and were disappointed, nine were in an intellectual state, only one had either hallucinations or motor automatisms, and very few had direct answers to prayer.

Under hypnotic influence, the first group are as a rule passively suggestible, while the second group, except in one or two cases, are suggestible, but are likely to add to or modify the suggestions in some way.

Taking now those who are converted, Starbuck gives the following:

Circumstances of Conversion	Men	Women
Revival or camp meeting	48%	46%
At home after revival	5	6
At home alone	32	16
Regular Church	4	25
Circumstances not given	11	7

Motives of conversion.

The motives of conversion have been touched upon slightly already, in giving social motives or objective forces, and the sense of sin. Other motives also enter in. Egotistic motives, such as to gain heaven, form 21 per cent of both revival and non-revival cases. These motives average highest in the earlier years, diminishing up to the age of sixteen, then increasing up to eighteen, and thence declining. Love of God and Christ is mentioned as a motive in but 2 per cent of the cases, while love of a moral ideal is given in 15. The latter motive steadily increases in importance with the age of the conversion.

These motives ought to determine the character of the new life, and yet the percentages do not seem to agree in all cases.

Motive	Men	Women
Desire to help others	25%	25%
Love for others	43	42
Nearness to Nature	36	32
Nearness to God	48	47
Nearness to Christ	5	6

If love of God enters so little into conversion, it seems strange that the feeling of nearness to Him should be so marked a feature of the new life, unless the desire for his approval is really more prominent before conversion than is indicated. Or, again, it may be that the mere feeling of relaxation, or release after the strain of expectation is given this meaning.

Notice how small a part is assigned to Christ in these figures, obtained in nearly all cases, from orthodox church members; and yet Christ is the central figure in the scheme of justification and redemption.

Let us now consider briefly the religious life which is a gradual growth, without the storm and stress of conversion. Whether the development shall be gradual or not is to a large extent a matter of temperament, but gradual growth is facilitated by early religious surroundings and by freedom to raise doubts and wisdom in answering them. In such cases the belief in God, Christ, and immortality play a much more important part than in cases of sudden conversion. The thought is not centered so entirely upon self.

Gradual growth.

In cases where the religious feeling was not aroused at puberty, some other strong interest takes its place. Usually this is the moral interest in 33 per cent of women and 43 per cent of men, but it may be intellectual (21 and 32 per cent), or esthetic (15 and 16 per cent).

What now are the permanent results? In the cases of gradual growth, doubts are usually settled as they rise, hence the growth is as a rule a part of character.

Permanence of conversions.

In cases of conversion, on the other hand, there is frequently a period of reaction and reconstruction of belief. The tables stand thus:

Result of Conversion	Men			
	Revivals	Age	Non-Revivals	Age
Relapsed	48%	13.7	24%	17.5
Permanent	15	17	35	18.7

Result of Conversion	Women			
	Revivals	Age	Non-Revivals	Age
Relapsed	41%	12	14%	16
Permanent	14	14.3	17	15.3

This reconstruction may be, and often is, simply a new interpretation of religious beliefs, a more vital realization of the meaning of religion to the individual. It does not necessarily involve any break with the church, although the struggle is often a severe one. Or again, it may lead to rupture. This period usually covers the period from twenty to thirty, the time when James tells us that intellectual habits are being formed.

What, in view of these facts, should be the religious training of the child? All agree that religion is not a thing forced upon man from the outside, but is rather the longing for unity with the ideal self. It is essentially social—the highest form of the longing for a friend who can perfectly understand us

Religious training.

> "What I could never be,
> What men ignored in me,
> This was I worth to God."

It is fed and nourished by the same source that nourishes society. "If a man loves not his brother whom he has seen, how shall he love God, whom he has not seen?" How can one attain to the love of an ideal personality or to a belief in a Governor, a Judge, a Lawgiver, if he does not see the evidences of this love and law about him in nature and in man?

We shall, therefore, agree emphatically with Dr. Hall, in his statements regarding the religious education of *little* children. It must begin in the cradle with the feelings of love and gratitude towards the mother, who stands then in the place of God. Reverence, obedience, and the whole list of Christian virtues are

first exercised towards mother and father, and the less they are called out in the family life the less moral and religious capacity will the child have in later life. If the mother and the father make themselves slaves to the child's caprice, he will naturally look upon God as his factotum. "As a father pitieth his children," so does God. How then if the father is unwise, unstable, governed by moods? How shall he point the child to a God worthy of worship? Whatever our individual belief may be, we can not deny that men do and must think of God as having the attributes of men, after an anthropomorphic fashion, and as are the men whom men know, so is their image of God. Here, then, is one place where both teacher and parent can give religious instruction by quickening the child's love for others and for the ideal.

Dr. Hall on the religious education of children.

Again, the child is constantly brought into contact with nature and with material things. If he is to control them, he must know and follow their laws. Absolute truth is demanded of him in his dealings with them, and absolute obedience to their laws. One must be rather doubtful of the advantages of unquestioning obedience to *persons*, for even the best of persons is so liable to error that a child may easily feel that he is compelled by brute force to submit to caprice. But there can be no such possibility in following nature's laws. Obedience to *principles* can be inculcated there if the teacher will but grasp his opportunity; and from this it is a short step to obedience to the moral law and to God.

Nature's laws.

Here we get the sense of God as the God of law, as a force infinitely more stable and valuable than the

petty personality of the child. Awe and reverence enter fitly to deliver a child from himself, or rather from human nature as it is. Here also the question of the legitimacy of punishments finds a solution. If the father embodies or expresses to the child the law that he understands, the child never rebels against punishment. He knows that it is his due. Hence the value of Spencer's doctrine, that a punishment should be the natural result of the act, or as nearly so as possible.

Directing the child's religious thought.

In giving specific religious instruction, we can not, if we would, prevent a child from forming more or less definite pictures of God, Christ, heaven, and so on, and so one of the first things is to emphasize only the qualities that are permanent and worthy. There is no reason why a child should picture heaven with streets of gold, but he may picture it as filled with blessed and happy people.

Then, when the child approaches the age of adolescence and conversion, the parents should take advantage of his new sensitiveness to religious and moral truths to impress upon him deeply his unity with God and all good. The details will necessarily vary with the convictions of the parents, but the important point is that this aspect of the child's nature shall be given its opportunity to flower, and yet not be forced into a premature bloom. The enthusiastic hero-worship of this age can hardly be more fitly directed than toward the great religious leaders, provided that the bondage of narrow dogmas be not at the same time imposed—a bondage that is soon thrown off, as the records of backslidings from orthodox conversion show. The

churches, except the Roman Catholic, do not as yet appreciate their vast opportunity of making ardent converts among the youth from twelve to sixteen years of age, and the comparative difficulty of making converts afterwards.

The religious sentiment is a feeling of the unity with a higher good, toward which we strive and upon which we depend. It is universal, but its expression in theological systems varies from century to century and from childhood to maturity. The little child accepts the faith of his parents without question, and modifies it so that he can understand it, thus often forming grotesque combinations. The older child begins to doubt and question. At adolescence there is an awakening to the importance of religion, followed by a sudden conversion or a gradual adoption of definite beliefs, according to the temperament and teaching of the person concerned. In many cases, there is a period of backsliding, followed by a second and permanent conversion in two or three years. If the conversion does not occur before the twentieth year, it is unlikely to occur at all.

Summary.

Religious instruction reflects the character of these periods. With the little child, who does not yet know the abstract world of principle, it takes the form of teaching habits of good living and loving; with the adolescent, the rousing of responsibility, and some specific form of belief, leading to church membership. In all cases, the teaching should be such that it seems reasonable to the child as he grows older and learns to think for himself. It must not violate his sense of justice or of love.

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CHAPTER X

Conception of Good and Evil

1. Tell the story of Jennie, and the box of paints (see section on Remedial Agencies in this chapter), and find what punishment the children would give. **Observations.**

2. Ask the children whether it is "fair" for a teacher to punish the entire class for something that was done by a member of the class, but by which one she does not know.

3. To test the sense of property rights, ask the children: "If you found a sum of money on the school doorstep, what would you do with it?" The amount found should be varied in the different grades. It should not be too large for the child to understand what he can buy with it, or so small that he does not think it necessary to seek its owner. The place where it is found—the school doorstep—shows that probably the owner can easily be found. A different set of answers would be obtained if it were found in the street.

"Are there good and bad children?" asks Beremini, and his answer is: "No. There are individual sanguine, choleric, mild, active, quiet, etc., temperaments. The leadership of moral conviction, however, is lacking, for it is the evidence of a gradually developing factor not yet attained in social life. To the child, then, all **No knowledge at first.**

things are possible, good and bad, and the thousand and one intervening stages; only dispositions and tendencies are present and the results are whatever comes of the environment." The more actual children are studied, the more evident does it become that the child's first acts are guided by certain instinctive tendencies and their pleasing or painful results, without any sense of right or wrong. A little baby is neither good nor bad, neither selfish nor unselfish. He cries and draws away from pain; he laughs and reaches out toward pleasure, with no thought of how others are affected by his acts, or of any further consequence to himself. Only through the long training of childhood, culminating at adolescence in a fuller ripening of the social sense, does he come to acquire true morality.

Society a force in the development of the moral sense.

Society—a divine or a human companion and judge—is essential for the growth of the moral sense. In the actions and reactions between himself and others, a child learns both his limitations and his possibilities, "thou shalt not," and "thou shalt."

The morality of a child accordingly reflects, mirror-like, the society into which he grows, as modified by his own instincts. The Chinese boy adopts his national morality as the American boy does his. If the two were interchanged in the cradle, their moral standards would also, in large measure, be interchanged, and the American child might so outrage his nationality as to worship his ancestors!

A child's attitude toward social institutions at the start, then, is one of total ignorance, which soon changes to puzzled ignorance when he is checked in doing what he wants; this confusion is followed by a

vague understanding of a superior force of some sort, with rebellion or obedience, according to his disposition, and his belief in the beneficence of this force. To trace the growth of this understanding in certain respects is the object of this chapter.

Attitude toward possession.

There is an English proverb that "possession is nine points of the law," and another that "finders are keepers." Little children tend instinctively to act upon these proverbs. The one who first gets a thing has the right to it against all others; and, with the youngest children, this feeling of ownership sets aside any previous ownership. The little child does not make the distinction of thine and mine. "Mine" is whatever he wants, and when he does not want it, he may or may not feel a sense of ownership. With kindergarten children the plea that they "had it first" seems to override the argument "It's my turn," especially if the turn is something left over from the day before. There is a tendency to start each day with a new account of rights.

Ownership on the McDonough Boys' Farm.

The right given by possession is illustrated very well by the boys on the McDonough Farm, near Baltimore. This group of boys is to a large extent self-governing. The first boys considered themselves all equally legatees of Mr. McDonough, and therefore having equal rights. Gradually a system of ownership grew up, ownership of squirrels' and birds' nests, and of land which rabbits and musk-rats frequented, etc. Ownership was conferred by the discovery of a squirrel's nest, and the tacking of the discoverer's name on the tree. It lasted for the season. No other boy had a right thereafter to touch that nest, and was punished if

found doing so. In the case of rabbit and musk-rat land, the ownership was acquired by setting a trap. The land for a certain distance about the trap then belonged to the owner for the season. But a bright boy realized that if he left his trap in the same place through the year, he would be the first at the opening of the new season, and hence ownership of rabbit and musk-rat land became practically permanent. On leaving the school a boy could will or sell his trap to another boy, and thus inheritance came in—but all based primarily on the first possession. We find just the same condition in opening new lands—forcible possession gives ownership, and only too often gives it even where there is a native race already in possession. The baby in clamoring to hold what he has by any means grasped, is only repeating the history of the race.

Attitude toward chance.

When a right is in dispute, or a disagreeable rôle is to be taken by some child, the decision may be thrown back upon some reason or custom, or if there is no such precedent, upon some form of chance. The most common illustration of the last is in the counting-out rhymes. The origin of these survivals of magical incantations which were designed to bring to light a guilty person shows even now, in that the person who is "It" usually has the least desirable part in the game.

Attitude toward the truth.

In the chapter on Imagination we have already shown how a child may invent a lie in order to escape from an unpleasant situation, just as he invents means of obtaining bread and jam. There is in this at first no perception of the moral wrong, but only the instinctive shrinking from pain. To cure the child, therefore, we must bring

about two things: (1) Make him brave enough to take the consequences of any act of his; and (2) make him realize the self-contradiction and doubleness involved in a lie. Sometimes it is said that a child should never be punished when he confesses any wrongdoing. Such a course must breed in a child a belief that there is no natural penalty for wrong, and must end in more or less contempt of the law that can constantly be overridden if only the transgression is admitted. Rather, so high a fearlessness and honor should be cultivated that a child who has done wrong shall present himself for punishment.

Plato says somewhere that if man did but know his highest good, he who had broken the law would hasten to the judge for condemnation and punishment as a sick man does to his physician for medicine. So in all our dealings with a child, even if pain is needful, every act and word should declare to him that our only purpose is to heal his moral sickness, and to increase his moral health. We all know that children can be very brave under the physical pain inflicted by a physician if they understand the necessity for it. Surely they will be no less brave under the pain resulting from their wrongdoing, if there also they see the need of it. Lies offer little temptation to a child who holds this attitude toward pain. But most of us are too cowardly ourselves to inculcate true courage into our children. We ourselves prevaricate and falsify under slight temptation, and we can expect nothing else from our children.

In all probability there is at first no intention of inflicting pain in bullying and fighting. Burk believes that they are survivals of acts useful to an earlier

civilization. That is, they are instinctive, and have no consciously defined purpose back of them. Probably curiosity to see how the victim will act also enters in, as it does in the case of many apparently cruel acts. In such cases there is a double remedy. First, the child's sympathy should be aroused for the victim by leading him to imagine himself in the other's place, or, if he can not imagine it, by actually putting him there. A little bullying and teasing of the bully, accompanied by remarks to show that the pain he suffers now is only the pain he himself has inflicted on others, will often cure him. In the second place, replace the bullying, teasing and cruelty by other acts, if possible by kind acts, toward the victim; but if that is not possible, by constant occupation in work and games where there is no opportunity to indulge this propensity. As to fighting, it is doubtful whether a fair fight leaves any bad moral effects, and does not rather square up grievances in the most satisfactory way to the persons concerned. There are, of course, boys who will brood over a defeat in a fight and will be induced by it to use underhand means the next time, but such a disposition is sure to come out in other directions also, and must be combated all along the line. The only way of knowing whether a boy has been benefited by a fight is to see how he feels toward his opponent. The parent's action can be safely guided by that.

Teasing, bullying, cruelty.

The moral ideas of children are concerned chiefly with concrete acts. A good girl or boy is usually one who minds the mother. At a great distance after obedience comes truthfulness, 29 per cent as against 54 per cent. Is it not a sad commentary upon us, that we should impress

The good and the bad.

obedience upon children so much more diligently than truthfulness?

In naming moral qualities that they would prefer in a chum, however, the order stands thus: kindness and good nature, justice, truthfulness, constancy, unselfishness, affection, modesty, obedience, courage.

We shall discuss the subject of custom at greater length under Imitation. Here we wish only to point out that to the very little child the right thing is the customary thing. He knows nothing of *why* he should or should not do this; he simply accepts the fact that others do it, and so he does it. The earliest moral education thus consists in forming good habits through imitation. Such training is of course incomplete unless it finally reënforces the habits or custom by reason, guided by a high moral ideal.

Attitude toward custom.

With little children law is a personal thing—the command of the parent or teacher; but as they grow older they become conscious that the parents also obey, not the judge or the policeman, but something back of him, something that is called the law. So a child develops the idea of an impersonal principle that applies to all men, and gives obedience to it the more readily as his own life is regulated by reasonable customs.

Attitude toward law.

The development of this sense of law is shown in the penalties children of different ages would attach to a wrong act. At seven, 89 per cent of the children punish regardless of the legal penalties; at twelve 29 per cent give the legal penalty, and at sixteen 74 per cent. The great change occurring at adolescence marks once more the child's mental and moral awakening.

In taking up the discussion of how to cure children's faults and failings, we enter upon the most vexed subject in education. All sorts of opinions are rife, from the theory that all children are always good, to the one that original sin makes almost the sum total of a child. To preserve sanity, and to discuss neither the angels nor the imps, but the children whom we play with every day, is the only object here.

Remedial agencies; punishment, child's attitude.

It may throw some light upon the subject if we first see what punishment children would themselves inflict and consider just.

Miss Schallenberger told two thousand children from six to sixteen years old this story: "One afternoon, six-year-old Jennie's mother went out to call, leaving Jennie playing with her box of paints. After a while Jennie went into the parlor, and saw there some nice new chairs. She exclaimed, 'Oh, I will paint all these chairs, and mamma will be so pleased!' When her mamma came home she found her chairs all spoiled. If you had been her mamma, what would you have done to Jennie?"

The punishments assigned fell into three classes.

1. *The principle of reprisal.* Jennie gave her mother pain, and so she must suffer pain. The little children advocated this far more than the older ones, for they thought only of the act, not of the motive. At six only 23 children speak of Jennie's ignorance; at twelve, 322, and at sixteen, 654. So also, none of the six-year-olds would tell Jennie why she was wrong; at twelve, 181 do, and at sixteen, 751. The specific punishment assigned is usually a whipping, but this lessens from 1,102 out of 2,000 at six, to 763 at eleven, and 185 at sixteen.

2. *Prevention by fear or terror.* None of the six-year-olds would threaten; 39 at twelve and 85 at fifteen would. None of the six-year-olds would make her promise not to do it again; 15 at twelve and 35 at fifteen would. Notice how very small this class is both as to threats and promises; and yet there are no more common methods than these two in dealing with children.

3. *Reform.* As we have already said, explanation of why Jennie's act was wrong increases steadily up to the age of sixteen. The idea of reform becomes more prominent, but even at sixteen it is not as prominent as the idea of revenge is at six. The older children are more merciful than the younger.

Now consider in connection with this the reminiscences by young people between seventeen and twenty-one years old, given by Street, of punishments that did good or harm

Under punishments that did good we find the following list: Sixteen were helped by whippings, of which they speak with gratitude; eleven by withdrawal of some privilege; six by talks; five by being left alone a time; four by scolding.

Just or unjust punishments.

Harm was done to eight by whippings; to eight by undeserved punishments; to four by sarcasm; to four by talks; to three by forced apologies; to two by public punishments.

These numbers are small, and must be supplemented by Barnes, who collected 2,000 papers describing just and unjust punishments, from children between seven and sixteen years old. Two and a half per cent of these 2,000 children can not recall any just punishment that they have received, but we are left ignorant of their

character and surroundings; 25 per cent can not recall an unjust punishment; 42 per cent of those who think punishment just, can give no reason, and 12 per cent think that it does them good, although they do not see how. In such cases, there seems to be an unquestioning acceptance of custom. Where reasons are given, the most common idea is that of atonement, the expiation of an offense by pain.

Of those who felt some one punishment unjust, 41 per cent gave as a reason that they were innocent of the offense; 27 per cent that they could not help it, forgot, did not know better, did not intend to, etc.; 19 per cent admitted the offense, but thought the punishment too severe, due to prejudice, etc. Eleven per cent maintained that the act for which they were punished was right, and 79 per cent threw all responsibility on the one who punished them. Injustice is, on the whole, charged about equally against parents and teachers, but as children grow older, they talk less about home matters.

The ideas of what punishments are just and what are unjust, are very vague, even among the older children. The forms about which opinions commonly differ are: scolding, confinement, and whipping. Six hundred and eighty-one whippings are called just, as against 493 unjust.

Finally, the results of investigations to determine whether children admit the justice of making the innocent suffer with and for the guilty are rather surprising. This case was presented to nearly 2,000 children from seven to sixteen years old: "Some children in a class were bad, but the teacher could not find out who they were, and so she kept the whole class after

school. Was she just?" Out of these 1914 children, 82 per cent considered her justified, and the percentage was nearly the same for all ages.

The reasons given for this decision were various. Forty-nine per cent claimed that it was just because the class would not tell on the guilty ones, evidently believing that the class as a whole is at least partly responsible for the good behavior of each member. Sixteen per cent said that the class was bad; 10 per cent, that the teacher did not know the guilty ones and must punish some one; 5 per cent, that it was a sure way of punishing the offenders, and 4 per cent that it would prevent a repetition of the offense. The feeling that the class should coöperate with the teacher in keeping order increases to over 50 per cent after the age of ten.

How then, do children feel towards punishments?

Summary.

1. Little children are much more prone than older ones to consider only the act, and not the motive; to punish for reprisal; to inflict physical pain; to give no reasons.

2. At no age do children consider threats and promises of much importance.

3. Practically all children accept most punishments as just; but many consider some one or a few unjust.

4. What is just, is very vague and is probably almost the same as what is customary, especially with the younger children. Under unjust punishments, for instance, violation of custom, either by punishing the innocent or helpless child, or by exacting an unusually severe penalty, covers nearly all the cases.

5. The most common punishment is whipping or spanking. Among children of all ages, 681 whippings

were considered just, as against 493 unjust. As far as these records go, children do not seem to feel that there is any greater indignity in a whipping than in any other form of punishment.

6. Most children admit the justice, though on various grounds, of punishing a class for the misbehavior of some unknown member.

What conclusions may fairly be drawn, as to the best forms of punishment? This raises the whole question of what agencies should and what should not be employed to secure right feeling and action, assuming that a child does act and feel wrongly. Such agencies may be divided into three classes: (1) the natural results of the child's act; (2) moral suasion: (3) punishment or fear in some form.

Moral training.

1. *Punishment as a Logical Result.* Spencer formulated the doctrine that the reasonable punishment of a wrong act is its own logical result, and that the punishment given by parents or teachers should simulate this natural one as far as possible. The theory is excellent as far as it goes, but there are many wrong acts in which the consequences are so far removed that the child can not of himself see the connection; and there are others where the effect for the time being is slight, and not painful; and there are still others in which deformity or death would result. As an example of the first we may take the habit of lunching three or four times between meals; of the third, careless playing with a sharp knife. We can not, in any such cases, leave the child to learn by the results, and so we supplement Nature by the second method—moral suasion.

2. *Moral Suasion.* Under this head falls all discussion of moral questions, whether it is the talking over of some past offense or the warning against some danger.

Here also there is much difference of opinion as to the value of discussing moral questions. More than a few high-school teachers assert that talking does only harm, because it hardens children and makes them hypocrites. On the other hand, we have some direct testimony from boys showing that they were greatly helped at a critical time by a friendly talk.

It is possible here, as in everything else, to approach a child in such a way that a discussion will only harden him, but surely we can not assert that a kindly, fair, and reasonable presentation of a moral question, with opportunity on the child's part for reasonable objections, will either harden him or make him hypocritical. He must have had sad experiences with other adults if this is the effect upon him.

The writer believes, on the other hand, that there is serious danger in leaving a child to form his own opinions of right and wrong. He has not the ability to generalize with certainty, or the experience upon which to base a correct judgment, and it is our duty to supplement his defects without forcing our opinions down his throat. This teaching is not best done by formal instruction, but in the evening or Sunday talks that every wise mother has with her children. At such a time, specific examples—this time when John got angry, and that one when Mary told the fib—will come up of themselves, and can be seen in their true light by the children. Such talks show the children where they must learn self-control and make them feel that all the family are helping them.

But the importance of kindness and gentleness in doing this, and of not forcing discussion must be insisted upon. To force children to talk over their sins, or to listen to moral platitudes, does have the bad effect which some teachers dread.

3. *Punishment or Fear.* When, however, the natural punishment is no deterrent, and when discussion and argument have been exhausted, is any resource left to the instructor or parent but an appeal to fear in some form? Let it be assumed that the action is evidently a wrong one, like telling a lie, and that the lies are not told from fear, but to get some supposed advantage. The child is a persistent liar, let us say. We will admit at once either that the child is abnormal, or that his previous training has been seriously wrong; but still, here he is, a persistent liar, on whom all our reasons have been employed without effect. Some hopeful enthusiasts maintain that there are no such children, but they do not count for much in dealing with practical questions. What are we to do with this child, if we do not punish him, and inspire him with a fear of lying by making him realize vividly its bad results?

Punishment should be the *last* resort, but if all other measures fail, then it may justly be employed. It is, as Hyde says, a moral vaccination in such cases, a slight sickness, to ward off a far more dangerous one. What the punishment shall be, in cases where there is no natural penalty, must depend very much upon the nature of the child, and upon the punishment inflicted upon his playmates. An unusual punishment is far more dreadful than a customary one, even if it be in itself lighter. The evidence obtained from children themselves seems to show that they do not, as a rule,

look upon corporal punishment with the same horror that their elders do. This is doubtless due in part to its being customary, and in part to their feeling of personal dignity not being so highly developed. Confinement may inflict more pain than a whipping, or the reverse may be the case.

The point is always, that a parent or teacher should know what form of punishment may best reach the child; that he should not inflict too severe a penalty, or, on the other hand, too light a one; and that he should impose the penalty, not in anger, but in all fairness of mind.

If a child does not yield to mild punishment, he lays himself open to more severity, and if he continues may be classed finally as a subject for a reformatory.

The discussion, so far, seems to have been based on the assumption that children are naturally bad, and that punishment is an essential part of education. We can not, indeed, deny that there are some unfortunates in whom the hereditary tendencies to crime need slight encouragement to come to a head. But such cases are few as compared with the great number of children whose slight deviations from right can be easily turned back. The prevention of wrong action is a far more important branch of practical morality than its correction.

Preventive measures.

Henry Ward Beecher once said, wittily and wisely, that if he could but be born right the first time he would be willing to take his chances on the Second Birth. Modern Christianity marks its sense of the relation between the physical and moral, by sending medical missionaries to the heathen and visiting nurses to the poor of

Physical conditions.

the slums. It has been abundantly proved that the moral tone is somewhat lowered by fatigue and that the habitual criminal usually has some bodily defects. The first thing necessary, therefore, for a healthy moral nature is a healthy body. The moral education of a child begins even before the marriage of his parents, in their cultivation of right habits of living.

Everything that contributes toward making the child well-born, physically, and toward keeping him so, is a factor in his moral education. Here, and here alone, is the justification for the expenditure of the best thought and energy upon the science of hygiene, including cooking. Such matters as the healthiest food for a meal and the healthiest way of cooking it, the clothing, and the ventilation of the house, assume from this standpoint the aspect of important moral duties. The child who is born healthy and kept healthy by good food, good air, and good clothing has the basis of a sound morality.

The struggle between right and wrong occurs in most of us because our feelings are opposed to our duty or our reason, and it could be in large part transferred to a wider sphere, if we had been properly trained in small matters.

Good breeding.

It is pitiable to find a child of ten or eleven years constantly disciplined for slight discourtesies, for indiscriminate eating at meals and between meals, and for cruelty to weak things. His moral struggles at this age should come in the resistance of temptation to active wrongdoing. Such a condition is usually the fault of the parent, who neglected these matters when the child was little. From the very beginning

of life, only courteous tones, gestures, and acts should surround the child, and be expected of him, as a matter of course. Good breeding, which includes all the lesser moralities, should be so habitual as to be unconscious. Then a child can turn his attention entirely to the more serious moral questions that each of us must some time decide.

In the decision of these questions, a child's greatest safeguard, especially between ten and eighteen years of age, lies in a close friendship with some older person, parent, teacher or friend. Such a friendship brings about naturally the free discussion of serious moral problems and allows a child to receive with an open mind the opinions of his elders. Both for the prevention and the correction of evil tendencies such a relation is of the greatest value. Parents should, therefore, make every effort to retain the confidence of their children, and teachers should consider the securing of that confidence as important as their class teachings.

Friendship.

The influence of good books, music, and pictures must not be omitted, although probably they have not as much influence upon most of us as our friendships. All these means, it must be understood, are but subsidiary to the great end of developing high ideals and noble ambitions in the child by precept and example. A morality that is merely habitual is better than none, but is only the basis of a morality that is shaped and modeled by the power of a living, glorious devotion to the highest aims. The parent or the teacher who can by any means inspire a child with a love of the good, the beautiful, and the true, with the ability to see them in the lives about him, and with a willingness to

sacrifice himself for their attainment in however humble a form, has done the utmost that one human being can do for another.

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CHAPTER XI

Feelings and Emotions

1. Trace in some one child the growth of fear, anger, and love. Note what called out the *first* expression in each case, and how the range of objects widens. Did the child express affection before he was taught the kiss or the loving pat? Was he imitating?

Observations.

2. Ask children of what they are most afraid, and why?

3. Obtain from adults reminiscences of the persons whom, as children, they loved best.

(1) At what age did the love exist?

(2) What relation did the person hold to you? How well did you know the person? Did you see the person daily or hourly? Was mystery an element in the love?

(3) Why did you love the person? On account of substantial services, like feeding and clothing you? Or for some personal quality? Or because of kisses and caresses for you? Or for gifts—candy, picture-books, etc.? (It would hardly be possible to question children themselves, as the knowledge that their papers were to be read by the teacher would prevent a free expression of feeling.)

There is probably no one subject in psychology that has caused as much discussion as that of feeling and

emotion. How pleasure and pain have originated and what is their value, what emotion is and into what classes it is to be divided, are matters on which there are nearly as many opinions as there are writers. We shall not, however, enter into the discussion of these much disputed points except in the most incidental way, but rather limit ourselves to the description of certain definite emotions, as they appear in children, and thus gain some idea of the emotional nature as it actually manifests itself. This will show, at least in a general way, what the most powerful springs of action are, and will lead on to the subject of interest, and of tendencies to action.

Introduction.

Interest, indeed, can not be eliminated entirely from this discussion, for interest is feeling directed towards a definite object, and it is impossible to consider feeling without taking into account its objects, more or less. Whatever division we make must be more or less artificial. We shall, however, take up here those feelings in which the pleasure or pain aspect is the most marked feature to the person himself. In interest the attention is concerned more with the object and less with the feeling, but, as we shall notice, either may pass into the other in any specific case.

Feeling and interest.

Even before birth it is probable that a child feels pains and pleasures of touch, from pressures and jars, but these are necessarily vague. After birth, for a long time, the most vivid feelings are those connected with hunger and its satisfaction, with warmth and cold, and with touch. Under this last head come the baby's delight in being relieved from the confinement of clothing, the

First pains and pleasures.

comfortable feeling of water in the bath, and the pleasure of being rubbed dry and warm. Preyer and Compayré agree that in the first months of life the greatest pleasure is the negative one of getting rid of pain. In the course of a month, moderately bright lights and slowly moving objects cause pleasure, and by the second month bright colors and sweet sounds are sources of delight. Between the fourth and sixth months, the pleasure of grasping things and the delight of being able to do things, such as tearing or crumpling paper, ringing the bell, and so on, come into prominence.

The appearance of the first smile that indicates pleasure is the occasion of much rejoicing. Of course a baby may make grimaces that look like smiles very early, either accidentally or as the reflex of some one else's expression, but the first smile of delight Darwin says did not appear in his son until the forty-fifth day. The smile is usually accompanied, especially as the child gets a little older, by crowing and kicking, and movements of the arms. Perez says that the little baby is easily fatigued by any unusual experience, whether pleasurable or painful, and should not be constantly amused by over-fond mothers.

If he is well, the baby is usually content to lie in his cradle and take in from it the sights and sounds about him, dropping off to sleep at intervals to recover from the pressure of the novel world. He gets all the amusement that his nervous system can stand in this way.

Prominent among the pleasures that seem to have no object, is the child's delight in being tickled. A summary of Dr. G. Stanley Hall's investigation of this

subject follows. Most children and even adults have a tendency to fuss with the skin, to rub it or scratch it, especially if it has any slight bruise, roughness or eruption that causes a feeling of uneasiness. There seems to be a demand on the part of the skin, as of the other sense-organs, to be stimulated. This need is satisfied by rubbing, and also especially, by tickling. The sensitiveness of the parts of the body varies more or less, but this is the general order: soles, under arms, neck, under chin, waist, ribs and cheeks. Many children can be thrown almost into fits by a little tickling, and at some we need only point the finger to send them into gales of laughter. Dr. Hall considers this great sensitiveness a survival of ancestral experiences in tropical lands, where the sense of touch must be very delicate to escape the bite of poisonous insects. Why the experience now should be so highly pleasurable, instead of a source of terror, is, to say the least, inexplicable, on this theory.

Tickling and laughing.

Another source of merriment to children is found in the animal world. Children, says Dr. Hall, have a closer connection with animals than adults do, because the organs common to men and animals, which in the adult are atrophied, are relatively larger in the child. There are over one hundred and forty of such organs, and they furnish a larger background of common feeling than is possible with the adult. The animals which are most often the cause of merriment are, in the order of frequency, the dog, cat, pig, monkey, rooster, crow, chicken, duck, ape, goose, sheep, cow, and horse. Children are also prone to laugh at what is forbidden or secret. This is due to a relief of tension,

Dr. Hall thinks, and is injurious on every account. It lessens the restraint upon social decency, and gives rise to wrong feelings about sexual subjects. It furnishes still another argument in favor of giving a child knowledge of such matters.

Anger.

Anger and fear are commonly considered instinctive emotions, that is, certain objects, upon the first acquaintance with them, will call out the same feelings and expressions from all men. Darwin observed that as early as the eighth day his child wrinkled his forehead and frowned before crying, as if angry; and in the second month Perez observed that the child showed anger by pushing away with a frown objects that he did not like. In the fourth month anger is certainly shown; the face and head become red, and the cry shows irritation. This is caused at first by delay in supplying food; but two or three months later will be called out by any thwarting of desire, such as the dropping of a toy.

Anger at this early age, it must be noted, is simply the instinctive rebelling against pain. It is wholly unreasonable and is best dealt with by diverting the child's attention if the deprivation is for the child's good. As a child gets a little older, especially if it is a boy, he is likely to vent his anger by beating the person or thing that offends him, or by throwing things at them. Here, also, until a child can be reasoned with, diversion of attention and the final securing of an expression of affection is the wisest method of treatment.

At best only a few of the causes of anger can be enumerated. There is, in the first place, what may be called an irascible disposition, with which some seem

to be born. Disappointments and vexations which others would hardly notice result in violent outbursts of temper. Personal peculiarities of speech, gait, dress—almost anything, in fact—may lead to a hate that is almost murderous in its vindictiveness. When a child is so unfortunate in disposition, only the most constant, temperate, kindly training in self-control will help him.

Causes of anger.

There are, in some cases, physical conditions causing constant irritation which are reflected in this bad temper. Hence parents should first of all ascertain whether the child is healthy. Fatigue is also a common cause of irritability. With older children as with younger the thwarting of expectations is one of the most common causes of anger. A child to whom a promise has been broken, who has been "fooled," who has been called home before he finishes his game, is usually an angry child. Anger over a violation of justice or principle is relatively uncommon in children. The feeling of pain or the suffering of personal injury is usually the underlying cause.

As to the method to be used in controlling anger we find the most conflicting theories. The natural tendency is to express the anger in some way—to strike or bite or scratch, or at least to say sharp words or to slam a door. Many men find great relief in swearing and others think vigorously what they dare not say. In all these cases, there is some vent for the emotion, and usually it is some kind of reaction against the person who caused the anger. Dr. Colin Scott has collected cases of girls who, when angry, would picture themselves as dead, and the person who had injured them

Control of anger.

as suffering from remorse. He advocates this as a healthy outlet for an emotion which, if kept in and allowed no expression, causes more and more resentful brooding over the wrong.

It is true that nothing can be worse than to brood over an injury, but expression of the anger is not the only alternative for this. Anything that keeps the mind off the injury and uses up the energy is equally serviceable. A long walk, chopping wood, carpentry work, embroidery—anything that is not so habitual as to be automatic, anything that forces one to attend to it, may be the vent for anger. Then after a time, the first strength of the emotion passes away, and we can combat it by reason and by the cultivation of love or pity in its place.

It is doubtful if anything but harm comes from allowing ourselves to express any bad emotion. The very expression reënforces the feeling and makes it more lasting. We can do naught but condemn the attitude which is cultivated by picturing one's self as the injured party, the cause of remorse to others. One may or may not have been injured when one has been angered, but whether one has or not, the pose of self-righteousness, of the injured martyr, is the pose of a prig and has nothing admirable in it. In short, to repress the expression of anger, and to cultivate the expression of love, is in large part to repress the anger and increase the love, and is the best training in self-control.

Jealousy appears very early, even in the nursing child, who gets angry if another child is given his bottle. It is caused by any prospect of another usurping one's own pleasures, and is best treated in much the same way as anger—by the cultivation of sympathy and love.

Jealousy.

None of the emotions of children have been so carefully studied as fear; for there is none which gives more anxiety to parents or is more difficult to overcome, especially with little children. **Fear.** Many students of child nature believe that there are instinctive fears, as well as fears that are the result of sad experiences. Others maintain that fears cannot properly be called instinctive because the objects which call them out vary widely. Thus some children are always afraid of darkness; others are wholly unaffected. Perhaps in view of this variation we shall be nearest the truth if we say that anything which makes a child feel helpless or insecure, or that startles him, is very likely to cause fear.

The very first fears, which come at least as early as the third month, are due almost entirely to sudden surprise. Loud or unexpected sounds, therefore, such as thunder or the banging of a door, or the furious barking of a dog, are the most common causes of these fears. A little later, strange objects and persons call out protests and tears from many children, but the fear is only slight. The recovery from it may be followed by laughter and delight. This makes it possible to train a child to face little fears, and afterward larger ones, bravely.

In Sully's record the first fears of things seen were called out by a strange place in the fourth month, and by a strange face in the sixth month. This latter fear was not overcome for a year. New clothes may cause terror, and tossing in the arms and learning to walk alone also cause many fears. In both these cases, the feeling of insecurity is doubtless the potent factor. Dolls that have anything unusual about them, such as

oddness, or ugliness, or broken members, also arouse fear. In this class also should be put fears of apparently uncaused occurrences, such as a feather floating in the air, or the shadow of a cloud moving over the grass. Some observers of animals claim that this is what makes horses shy at a bit of paper in the road. The story of the dog who was frightened into a fit by seeing a bone moved by an invisible thread also belongs here. Fear of the dark does not occur until the fourth month or later, as a rule, and is closely connected with imagination.

All these fears may rise at any time with children who never had them before, and they may persist through life, or remain for only a short time. Fear of black things, black animals, black dresses, black places, and fears of furs and of teeth, occur also with some children without any experience to justify them. Whether they are reverberations of ancestral or prenatal experience or not, we cannot say. Preyer records that at ten months, his boy was afraid of high tones; and at twenty-one months, of the sun. Doubtless each parent can cite other individual instances.

Percentage of fears.

Let us consider now the proportions of children who have and who have not fears, and the numbers and the causes of the fears. It seems to be the case that deaf children fear more kinds of things than normal children, and have more imaginary fears. The sense of helplessness is more prominent. Imbeciles, on the other hand, have fewer fears, for they do not know enough to be afraid. Miss Calkins has investigated the fears of children with these results:

ALL CHILDREN

	UNDER 3 YEARS	3 TO 6 YEARS	6 TO 16 YEARS
No fear	39%	11.5%	5 %
Fear	61	88.5	88.2

COMPARISON OF BOYS AND GIRLS

	UNDER 6 YEARS		6 TO 16 YEARS	
	BOYS	GIRLS	BOYS	GIRLS
No Fear	17.4%	24.2%	1.7%	0%
Fear	82.6	75.8	98.3	100

The girls show less variety in their fears and are less afraid of imaginary things than the boys. Under three years, 66 per cent of the fears were of things seen, and 23 per cent of things heard, an exact reversal of the fears of the baby. Both of these diminish somewhat by the sixth year, and the number of miscellaneous fears increases. The change in the objects of fear at different ages is also very interesting:

	THINGS	PEOPLE	GHOSTS	DARK	WILD ANIMAL	DOM. ANIMAL	NATURE
Under 6 years	7.3%	17.2%	2.5%	9.8%	14.7%	26.2%	4%
9 to 14 years	2.2	2.4	2.2	1.3	60.6	13.7	93

Imaginary fears increase from 27 per cent at the age of six to 55 per cent at fourteen. Indeed, we may probably class the enormous increase in the fear of wild animals as an imaginary fear to a large extent, for few children have any actual experience with wild animals. The fear of domestic animals decreases. All fears of the other things with which the child deals constantly, decrease steadily, except fear of nature.

Here the feeling of helplessness and uncertainty seems to increase with experience. A comparison of these observations with the reminiscences collected by Dr. Hall which are far more numerous than any others, and by Holbrook, will be of interest.

OBJECTS OF FEAR UNDER 23 YEARS OF AGE

	HALL		CALKINS	HOLBROOK
	GIRLS	BOYS		
Thunder	14%	9%	.....	1%
Lightning	.....	.....	.....	.....
Persons	11	9	7.6%	18
Reptiles	11	9	.....	.....
Darkness	0	9	4.4	22
Death	6	4	.....	6
Domestic animals	6	3	18.4	12
Wild animals	.....	.....	43.4	.....
Rats and mice	4	$\frac{4}{5}$	.....	.....
Insects	4	3	.....	.....
Ghosts	4	$2\frac{1}{2}$	2.2	$\frac{7}{10}$
Wind	$3\frac{1}{2}$	2	.....	.....
End of world	3	$\frac{3}{5}$	.....	.....
Water	3	$3\frac{1}{2}$	.....	.....
Robbers	$2\frac{3}{4}$	2	.....	.....
Miscellaneous	$2\frac{3}{4}$	2	.....	3
Monsters	.....	.....	.....	1
Hill	.....	.....	.....	3
Vague Fears	.....	.....	.....	4

Dr. Hall gives an average of 2.21 per cent fears for each boy, and 3.55 for each girl, while from other figures he gets an average of 2.58 for each boy, and 5.46 for each girl.

For different ages the averages are:

	UNDER 4	4 TO 7	7 TO 11	11 TO 15	15 TO 18	18 TO 26
Boys	1.76%	1.5%	3.56%	3.69%	3.60%	2.55%
Girls	4.89	2.44	4.34	6.22	10.67	4.31

This directly contradicts Miss Calkins' observations for children under the age of six, as she found that

girls have fewer fears than the boys; and she does not find the difference after six so great as Dr. Hall does.

In considering the objects of fear, we find two serious discrepancies between the three observers: the fear of darkness varying from 4 per cent to 22 per cent; and the fear of wild animals varying from 0 to 43 per cent. The other slight variations would probably disappear with more observations, but these two points of variation are difficult to explain. Even if we count reptiles, insects, and rats and mice as wild animals, the total is but 15 per cent as against 43.4 per cent. Evidently much more careful observation is necessary here. Dr. Hall says further that the fear of the world and of kidnapping decreases with maturity, while fear of thunder and lightning, robbers, reptiles, and insects increases. Fear of wind, water, darkness, domestic animals, ghosts, death, and disease increases at pubescence and decreases later.

Discrepancies.

Dr. Hall is very fond of referring fears to ancestral experiences, that is, he makes them instinctive survivals of a life under other conditions. We have already seen, however, that the fears vary so much that this explanation is hardly tenable. It seems more reasonable to refer many apparently causeless fears to nervous shock or to the feeling of helplessness and strangeness. Of course, pictures and stories are also common causes of fear.

Causes of fear.

Where fear is purely the result of nervous shocks it is difficult to control. Many people who know the harmlessness of it, are, nevertheless, stricken with terror by thunder. The most that can be done in such cases is to hold the mind to the conviction of the harmlessness of the object

Control of fear.

feared. In other cases, such as fear of the dark, or of ghosts, entire control can be attained by this method, especially if the child's pride is stimulated so that he wants to overcome his fear.

It should be needless to say that a child ought never to be frightened unless fear is the only thing to keep him out of harm. It is true that "a burnt child dreads the fire," and fear is potent in many directions, but the parent or teacher who habitually appeals to it is cultivating low motives. It would, perhaps, be going too far to say that fear should never be employed, but it should be a last resort and the necessity of using it declares a deficiency either in teacher or in child.

Bashfulness.

Bashfulness is an offshoot of fear, the survival in a lessened form of what was active terror in our ancestors. It appears in the little child as an instinctive shrinking from strange persons and things. It is not marked enough to be called fear. However, it may be overcome under proper conditions by imitation, but is succeeded in the second or third year by a second shyness, which is due to self-consciousness. The three-year-old hides and yet looks; he wants to become acquainted, but can not forget himself enough to do so. Such bashfulness is likely to obtrude itself under unusual circumstances until adolescence is passed.

Joys and sorrows.

Out of nine hundred children 40 per cent remember a Christmas or a birthday as the happiest day of their lives; and 25 per cent remember an excursion or a picnic on account of the fun that they had. Anything of a pleasing nature which introduces novelty into a child's life delights him.

The death of some relative or friend caused the unhappiest day for 50 per cent of the children, while sickness, physical punishment or disappointment caused it for 35 per cent. In general, the greatest joys and sorrows of a child at any time or age are connected with the satisfaction or thwarting of his strongest interest.

Sympathy and pity.

The first expression of sympathy is purely imitative. The baby of six months draws down his mouth when others cry, and laughs in response to laughter. If James's theory of the emotions be true, this instinctive reaction creates a corresponding state of mind, at least to a slight degree, which is the basis of sympathy. As a child grows older, he learns more and more by experience what states of feeling certain expressions stand for, and is able to put himself into the other person's place. Preyer records that in the twenty-seventh month his son cried with pity at seeing paper dolls cut in two. This first pity is, as we should expect, shown in connection with physical things—hunger and cold, lack of shelter and clothing. On the other hand, children frequently laugh at deformity and sorrow. One of the sad chapters in the lives of feeble-minded children is that they can seldom be allowed to play with normal children because they are badly treated. Such ill treatment is not, however, so much a sign of cruelty in children as of ignorance, and can usually be cured by showing the child the real suffering that he is causing.

In the same way he can be taught kindness to animals. It is certainly true that very often when children are hurting animals cruelly and are laughing at their

contortions of pain, they do not see anything more than the mere movements, as of a jumping-jack. Their fondness for practical jokes shows this same characteristic. The only cure for such lack of sympathy is a wide experience and a constant exercise of the imagination in "putting yourself in his place." When Marie Antoinette was told that the starving peasants of France had no bread to eat she asked in all simplicity, "Then why do they not eat cake?" She lacked the experience necessary for sympathy.

Love.

It is commonly said that the child's first affection is given to his mother and is based upon his physical dependence on her and his pleasure in the warmth and comfort he obtains from her. It is difficult, however, to see how anything but the feeling of dependence and of personal enjoyment can rise from this basis. Rather we take the ground that Dewey does, that sympathy which seeks an outlet in action is love, and that antipathy which seeks an outlet in action is hate. When our liking for a person depends solely upon his usefulness to us, it is unworthy of the name of love.

To return to the baby, his first spontaneous caresses, are, naturally enough, given to the one who tends him and whom he knows best—his mother. As he grows older, the love of parents and of friends can show itself more and more in different ways, and his first responses, which were to a large extent instinctive and vague, also become more varied. His love for his parents deepens and widens to include friends and God.

Mothers sometimes lament the growth of their children to manhood and womanhood, as if the bonds of

love were lessened thereby. This may happen where a child is allowed to accept without any *return* the greatest sacrifices from his parents. He is thereby taught selfishness and allowed to think that his good is distinct from his parents' and superior to it. It is sometimes said that the most selfish person is the one most tenderly loved. There is a certain truth in this.

Selfishness in affection.

Love is, in its very nature, active and self-sacrificing, and increases in proportion to what it does. If it is expended upon a selfish person who is believed to be worthy of it, or if it is called out toward a sick or helpless person, it finds ample room for growth. So when a child is little, the parents' love is peculiarly tender, and it is hard to have this love grow into a different, though equally strong one, and still harder to train the child to love by teaching him sympathy and service.

Love and service are, ~~however~~, inseparable terms, and so, even from babyhood, the little one should be allowed and encouraged to do his best in helping about the house, in comforting his parents in their worries and in celebrating their joys.

In every possible case some act expressive of his love should be suggested, and with it, the loving word and the caress. Anglo-Saxons are proverbially reserved; in our fear of hypocrisy, we go to the other extreme of reticence. Many a child can remember each individual kiss that he has received from parents who would give their lives for him if necessary, and who do sacrifice many pleasures and luxuries. Such restraint works a harm to the child in allowing him to believe himself unloved in

Caresses.

contrast to his more fortunate companions who are kissed and caressed. He is not of an age to understand the love that gives up comforts to provide him an education, while leaving him without the loving word and the kiss for which he longs. Parents do themselves wrong in their children's eyes, and hurt the children by such methods. Is it not better to have both the act and the word or caress? We understand that words without deeds are vain, but why should we not have words with deeds?

Love and service.

Finally, there is no better way to cast out hate, jealousy and all their brood than by service; loving service if possible but any sort of service at first to which we can persuade the child. A forced kindness later becomes spontaneous if persisted in. While it may only breed hypocrisy in a child to compel him to treat kindly a child whom he dislikes, yet we can very often call his attention to some interesting or lovable or pitiable trait so that he will of his own accord help the child and grow to like him.

Richter tells us to teach our children to love, and they will need no ten commandments, and we have a higher authority than his for the belief that the Law and the prophets are summed up in the commandments to love God, and to love our neighbor.

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CHAPTER XII

Interests

The use of the plural number in the title—interests instead of interest—emphasizes the fact that we do not wish to concern ourselves with the discussion of theories so much as with the presentation of observed facts. We shall touch upon the various theories of interest—the singular—only incidentally, and instead shall discuss what children are interested in and what bearing their interests have upon our treatment of them.

Introduction.

In discussions of interest, it is usually assumed that every one knows what interest is and what it involves; but there is, in reality, no one mental attitude more difficult to disentangle from others than this one. So closely is it connected with our feelings and emotions, our expectations and reasons, our decisions and will, that we stand amazed at its complexity.

Nature of interest.

Interest seems to express the whole personality more completely than any other mental attitude. Show me a man's interests and I know the man, both his habits and his ideals. We might say that interest is the impulse to self-preservation, directed toward a definite object or idea. It is the impulse of the man to realize himself in some particular form. The musician's interests, the business man's interests, the scholar's interests are, each of them, the man's desire impelling him to secure the satisfying thing

Interest is not, then, a passive thing in the beginning. We *are* interested in so far as we *take* an interest or *have* an interest. This first interest, it is true, may have others derived from it, but we must at the beginning hold an active attitude toward life rather than a passive one. The baby's eye longs for light and so receives it gladly. His hands crave things to touch as much as his lungs crave air. So we find constant action and reaction between the baby and his surroundings.

Interest thus includes both feeling and thought and points toward action. It is the focusing of the state of consciousness preliminary to action. It is attention, but attention with especial reference to the feeling which prompts it and to the action which follows.

Concerning the feelings which prompt interest we may say that they are in the first place instinctive feelings, the reverberations of ancestral experiences.

Heredity and interest.

There can be no doubt now that any child is not simply the child of his parents, but of all his ancestors. Traits that do not appear in either father or mother, but that go back to some ancestor of perhaps a hundred years before, may suddenly crop out in some feature, some deformity or beauty, some trick of voice or carriage. When we consider that if we carry direct inheritance back only eight generations, there are two hundred and fifty-six direct ancestors, we can see how immensely complicated a thing inheritance is. Eight generations are nothing to an individual with an ancestry going back millions of years, and yet, if the present view of inheritance be true, all those millions of years

of inheritance of living and acting are summed up in each one of us to-day.

Biologists have proved again and again that the human embryo in its development passes through well-marked stages representing the great divisions of animal life, and now anthropologists are teaching us that from birth to maturity the child also passes through definite stages representing the progress of mankind. (Neither biologists nor anthropologists claim that the child repeats all the stages of evolution.) Rather, he goes through only certain of the most important ones, and skips the rest.

What is true on the side of physical growth seems also to be true on the side of feeling and acting. All babies have certain instinctive ways of feeling and acting toward certain stimuli, and these are what prompt them to learn more about the object or to get away from it, that is, to show an interest, either pleasurable or painful.

Such a feeling is not by itself an interest. An interest comes when the craving receives satisfaction from some definite object. The baby sees and grasps the bright soft ball and then has an interest in the ball. The artist imagines the beautiful form. He has an interest in it. In all cases, when the *obscure* craving finds some *definite object*, or idea, which joins to it satisfaction or frustration, there is a pleasurable or painful interest.

Acquired and natural interests.

Interests may be either natural or acquired—natural, when the object or idea is in itself attractive or repellent; acquired, when it derives its interest from something else.

A beautiful color, or a loud sound, are examples of the first. If, however, we love the color because it is

a dear friend's favorite, the interest is derived; so also if we dislike the sound because it reminds us of a dreadful accident. Acquired interests call into play an appreciation of the relation of means to ends and of effects to causes; natural interests do not.

As interests thus call into play both feeling and thinking and point toward action, we shall get the best concrete view of them available with our present knowledge by presenting a brief summary of what we have had so far and an outline of the consequent action. That is, we shall try to draw a picture of the child at each of the typical stages: (1) Babyhood, up to the acquisition of speech; (2) early childhood, up to the second dentition; (3) later childhood, to the advent of puberty; and (4) adolescence, to the completion of the bodily growth.

The interests of babyhood.

For the first two months of his life, we may fairly say that the baby's chief interest is in what goes into his mouth. Not only are the lips and the tongue the parts most sensitive to touch, but touch is relatively more developed than other senses. Hearing is imperfect and sight is short and uncontrolled. The arms and legs are not under control for grasping and creeping, so that the baby must perforce wait for what comes his way. Furthermore, he spends a large part of his day in sleep. What little display of anger he makes is when he does not get his food promptly. So the baby is a dimly-seeing, dimly-hearing, little creature, sleeping much of the time and conscious chiefly of the satisfaction of food.

During the third month, however, with more distinct seeing and the rise of memory, comes a marked interest

in seeing things. Now the baby holds his head up, twists his head and body to see things, and studies everything about him, learning it in its various appearances. The interest in suckable objects continues and is strong, but its prominence is relatively less because visible objects have now become so interesting.

From the fourth to the sixth month, both of these interests continue, and are fed and supplemented by the great interest in graspable objects. Grasping and sucking, seeing and grasping, seeing, grasping and sucking are now combined and find their satisfaction in superlatively interesting, seeable graspable and suckable objects.

The baby is now getting control of his body, and between the fifth and sixth months the rise of the instinct of imitation gives him endless desire to exercise this new control. Anything which he can imitate now becomes interesting and as the movements and voices of persons are most imitable, they become most interesting to him. The instinct of speech arises a little later, and then the baby begins to babble and to imitate the sounds about him. After some months of babbling and imitating he succeeds in beginning to use speech as well as gestures and cries to express his thought.

The craving of the growing limbs for more exercise results in creeping and later in walking, with the wide range of new activities and interests thus made possible.

So, during the first year and a half, the baby's interests are connected with the exercise and control of the sense-organs and of the larger muscles of the body. By the end of this time he can usually walk and

talk, and use his five senses with a fair degree of accuracy, though he still is lacking in control in many respects.

From the acquisition of speech to the time of the second dentition, the interests of babyhood are still strong, but are shown in more attention to the details of the activities. The child now likes to play games that test the sharpness of the senses; he likes to experiment with new movements—to walk on tiptoe, to skip and dance, to play finger-games, to draw, to string beads and so on.

Interests of early childhood.

His interest in imitating persons is greater than before. His plays at this time are very largely imitative. He imitates persons more than he does anything else. He personifies all sorts of inanimate objects, and the only cause he knows is a personal one. Through his interest in imitating persons he enters into the race interests which are going on about him—learns in a crude way how we get our food and so on. His interest in language persists in various forms, such as his delight in nonsense rhymes and his persistent desire to name all the objects he sees. His love of rhythm is also prominent and is closely connected with the increasing control of his movements.

During the latter part of this period some new and strong interests arise. As memory and imagination develop they introduce the child to another world which he finds that he can change to suit himself, while he can not so alter the world of his senses. The love of power which in his babyhood was gratified by his new control of his body, now finds another source of

gratification in this mental play. We find him, therefore, listening to and inventing tales of marvel and mystery.

The rise of an interest in causes at this time also leads to wonderings and questionings and to speculations sometimes startling in their shrewdness. With many children there also seems to be an interest in enumeration and in quantities, as seen in the love of counting and in the comparisons of size.

In the little child, then, up to the time of the second dentition, the interests are to a large extent confined to his delight in the feeling of his own activities and of his increasing control of them. On the physical side this appears in his enjoyment of plays that exercise his senses, in his practice of all movements that are a little difficult for him, and in his use of rhythm and of nonsense rhymes. On the mental side, it appears in his love of imagining and inventing, in his counting and measuring, and in his ceaseless questioning. The union of the two and also the growth of his social interests is marked above all by his love of imitation, the most characteristic interest of this period.

In these early years the interests are immediate ones. The child enjoys the action for its own sake without much reference to any end. Little children who are playing "Pom pom pullaway," for instance, may forget all about the goal in the delight of running, and end the game in a chase. So also a little fellow begins to draw the story of the Three Bears, gets interested in making the bear and covers his paper with bears. The movement or activity is what he enjoys. He does not care for making some *thing* so much as he does for going through the movements of making. On this

account a little child is usually easily diverted from one thing to another, if only the new thing allows the same general movements as the old.

Educationally this is the period when interests can be given a more definite and permanently valuable form if the parent or teacher provides the materials for the child to work with, and surrounds him with a life that is worth the imitation.

Interests of later childhood.

In the period from the second dentition to puberty, there is a great widening of interests due, on the physiological side, to the rapid growth of association-fibers in the brain. The character of the interest changes materially. The little child, as we have just said, is interested principally in doing for its own sake, and when he wearies of one activity, he turns at once to a new one. As he gets older, he begins to do things for the sake of getting or having something else. He makes the distinction between end and means more clearly and the means have an acquired interest lent them by the natural interest that the end has for him. Where the little child is well satisfied with the scrawl that he calls his drawing, the older will erase and draw over, and perhaps not be satisfied even when he is all through. The little child wants to put on his pretty dress regardless of all else. The older child may want to also, but when he goes to make mud pies, he realizes the use of the plain dress. It has an acquired value, while the pretty dress has a natural value.

Such acquired interests constantly increase in number and in remoteness from the end, until we find the man or woman working for an end in a drudgery that has in itself little that is pleasant.

The child of this age has interests outside of his own narrow circle, although they are still interests in persons. Thus a beginning can be made in history and science, the idea being to find out how people under certain conditions would be obliged to live, how they would be obliged to get food and clothing and so on.

Interests in the "how."

This interest in the "how" of things, Dr. Dewey warns us, however, is of slow growth. It arises in about this order, he thinks: reading, writing, numbers, science, history and literature. That is, a child first sees the advantage of knowing how to read and is interested in learning words and sentences before he sees the use of learning how to write. His first interest in science and in history is the same as the little child's—the delight in activity and in a good story, but a little later he begins to experiment in science and to reason from cause to effect in history. The interest in *why* has become replaced by a curiosity as to *how* things are done. In order to hold this interest in the "how" a child must also have experiences that make the "how" of use to him and he must have some end that *he himself* wishes to reach. This point is too often neglected by teachers. They think that if they themselves see the end, it is sufficient. But if the child does not know what he is working for, how can he be long interested? Or even if he is curious, how can he work at the adapting of his material to what he is making?

To find out what children's interests are, a series of observations was made by Binet, Earl Barnes and Shaw in this manner: They made out a list of common words and asked the children to tell them what the thing was which was named.

Observations.

The children were taken separately so that they could not imitate each other. They were asked no questions and given no suggestions, but left to state their thoughts themselves. Left thus, it was believed that the children would describe the object according to their greatest interest in it. The list of words was as follows:

knife	mamma	earthworm
bread	potatoes	shoes
doll	bottle	finger
water	flour	clock
armchair	snail	horse
hat	mouth	wolf
garden	lamp	omnibus

All three observers found that the children were most interested in what they could *do* with a thing, or in its *use to them.* The great majority of them defined the words from this personal point of view. For example: "A mamma is to kiss me good night"; "A lamp is to give me light."

Next to use, they were interested in things that had action or movement. They showed very little interest in the structure or substance of things and less than 2 per cent were interested in form. Only 3 per cent were interested in color, but the very small per cent in both these cases may be because the words given do not call up these ideas. Very few of the objects mentioned usually have any such coloring or structure as would attract attention. At the same time, it is true that children have little general esthetic interest in the color of pictures. It is safe to say that practically all children prefer colored pictures to black and white. They also choose pictures which

Interest in color and life.

they call "cunning," or "sweet" in preference to the masterpieces. A mother and child is usually preferred to a madonna, and pictures of children, kittens and puppies in playful antics mean much more than other pictures. Natural and lifelike pictures are preferred to ideal ones, and those that represent activity of some sort, to those of quiet scenes. In all this we get again the same truths: childish interests are in the personal and active sides of life.

As the children grow older, they define the terms less according to the personal use, and more by putting them into a larger class. Their concepts become more prominent, and the central idea stronger. Formerly it was supposed that reason—of which the idea of cause and effect is a prominent part—did not develop until the age of fourteen or fifteen at least, but we understand now that it is of as long and gradual growth as our other mental powers. Nearly all children ask "why" before they are four years old, and this interest is a constant one, although it is by no means the most prominent one until maturity, if it is at that time.

Interest in school Readers.

Another way in which children's interests have been observed is to find out what stories from their Readers they remember best. Nineteen hundred and fifty grade children have been questioned on this point with rather startling results. It was found to begin with that 44 per cent of the pieces in four Readers, or nearly half, were remembered after one term by only 5 per cent of the children. Almost half of the material in these Readers was uninteresting, and this was to a very large extent the instructive and moral parts.

The first lesson in each Reader was remembered, and also the long or continued lessons. Those best remembered are, as we should expect, those which are especially natural, and which appeal to the child through experiences similar to his own. We find, *e.g.*, that 32 per cent of the children remember stories of life best, and 12 per cent those of animals. Seven and one-half per cent give allegiance to stories with morals, 56 per cent to stories of heroism, and only 2 per cent to instructive stories. At first the liking for poetry is simply enjoyment of rhythm, and not until adolescence does it begin to be enjoyed as literature. Of course these interests were influenced by the way the stories were told.

The Readers were, if we remember correctly, those in the state text-book series of Indiana, and were considered to be about the average.

Dr. Hall's test.

Dr. Hall's *Contents of Children's Minds* is also interesting here as showing how little many of our Readers appeal to a child's own experience. His list of words was obtained largely from First Readers, and the children's ignorance is amazing.

Out of 113 objects,

90%	are	ignorant	of	7	of them;
80 to 90%	"	"	"	14	" "
70 to 80%	"	"	"	10	" "
60 to 70%	"	"	"	21	" "
50 to 60%	"	"	"	17	" "

making an average of over 60 per cent of the children who know not of the meanings of over half the words.

With regard to the regular school subjects, observations have also been made on two thousand children

above third grade. Arithmetic, history, geography and spelling are by far the most popular studies, in the order named. Drawing, music and nature study can not compete with them. Probably, however, these do not show the natural interests of children, but rather are due to the conditions of this particular school. It is stated that drawing, for instance, is not much emphasized, and again, it is very true that the teacher's interest controls the child's more or less. If there were a good arithmetic teacher and a poor drawing teacher, the child's interest might be just the reverse of his natural interests.

Childish interests during this period may then be summed up thus: the interest in imitation is less prominent than before; the interest in imagining and wondering has become more clear cut and related to the needs of life. It shows itself as a greater interest in the relation of means to end, in the mechanism of life, or, in a more abstract form, as a love of classification. The child at this time therefore begins to enjoy simple experiments, he likes to make collections, he is thinking more in the abstract.

The language interest is smaller during the first part of this period but seems to revive in the latter part in the secret languages which we shall mention later. This seems to indicate the advantage of beginning the study of foreign languages at this time.

The interest in the use of the senses is at least undiminished, while the love of movement is much increased. The games of this period call for a far greater amount of muscular strength than before.

The interest in persons becomes stronger and now the child delights in a history that describes heroic

deeds. On the other hand, the moral and religious interests are not much developed as yet.

In all cases an important difference exists between this period and the previous one, namely, that the child more and more, if given the opportunity, plans ways and means of reaching an end. The little child does this to a very limited extent. This and the greater variety of interests of the later period are due to the rapid growth of association fibers in the brain.

Therefore the general educational problem of this period, to which all others are subsidiary, is to train the power of adapting means to ends, to cultivate acquired interests or the power of voluntary attention.

The first essential is, of course, an end that to the child himself seems valuable, and this is supplied by the natural interests of which we have already spoken, directed into channels which are valuable for life to-day.

Just in proportion as the end is keenly desired, all the details of the means are interesting. To the woman who loves ice-cream all the details of making, packing, and freezing are of interest. Drudgery goes back to one of two things—either the act is so simple that after it has been learned a few times, the mind finds no food for thought in it, or else the person has no interest in what he is doing, no end in life which he is striving to accomplish through the medium of this act. We need, therefore, to train children to see the bearing of all the little things of life upon the ideal character which they hope to be, upon the business which they hope to create, upon the profession which they intend to follow. Inability to connect ends and means; that is, lack of training a child to have acquired

interests, is a great defect in our educational system to-day. Such a connection between the end that the child desires and the means which have only an acquired value preserves the balance between pleasure and duty, and makes the strong-willed, reflective man.

Finally, with the advent of puberty, and the last period of rapid brain growth, the child enters upon the last educational period. The period is now usually estimated to last to the time when bodily growth is complete, at about the twenty-fifth year.

The interests of youth.

On the side of interest this period is not so much characterized by the rise of new interests as by the broadening and deepening of those already existent. The senses become more active and consequently there is a keener interest in observation of all kinds, in nature, and in science. The rapid development of the muscular system in boys results in the athletic craze. The wider development of reason appears in the doubts and questionings about the various systems of thought that the youth finds embodied in the school system, the political system, the religious system, and all the other systems.

The most notable development of the period is doubtless the growth of the interest in persons which comes as the direct result of the sexual development of this age. The child now for the first time enters fully into his social inheritance, feeling the bonds which connect him with others and desiring the responsibilities and privileges of all adults. The moral law now appeals to him as a need of his own nature, and the obligation to do good for its own sake now becomes binding. In numerous ways his own

individual self is yielded to his social self, in ways both tragic and comic—in the devotion to dress and manners as well as in the abandonment to religious exaltation. It is hardly stating it too strongly to say that the key to the adolescent is his interest in living up to what he conceives to be the social demands upon him. Control of him lies to a large extent, therefore, in controlling his conceptions of what these social demands are, and this is not a matter that begins only with adolescence.

Importance of early social training.

We have had occasion to remark many times before that social habits must be inculcated from the beginning, and we can now see the importance of this. The youth who has now awakened to a vivid interest in his relations to others has his sense of what these relations should be determined in part by the social habits which he has already acquired, and in part by the customs of the particular people with whom he is now thrown. Where the two sets of customs disagree, as is often the case, the child's consciousness of his own ambiguous position is very keen, and he brings all his judgment and reason to bear upon his decisions as to what he should do. Now he is fortunate if his social habits and his training in independent judgment are such that he can trust to his habits for all the smaller details of deportment and devote himself to the question of what his ideal shall be for the vital questions of life.

In the shaping of this ideal or interest, as we have already said, we must call into play all the influences of surroundings—books, pictures, etc.—but more important than any of these to the adolescent is the wise and untiring friendship of some older person,

teacher or parent. Fortunate is the youth whose father and mother are his best friends —and sadly lacking in some respect are the parents who have not kept close enough to their children to be their best friends.

We hear a great deal of talk about the importance of keeping children interested. Unless children like a school duty, a task, a dress, or a certain kind of food, it is assumed that they ought not to be bothered with it. It is claimed they must follow their interests; that is, apparently, their caprices. What right have we to impose our likes on them? They surely should be as free as others to express their whole nature without let or hindrance.

Training and interests.

On the other side there are still advocates of the idea that the natural man is full of evil desires, so that the very fact that a child wants a thing is one good reason why he should not have it. Moreover, say these duty-lovers, life is full of disagreeable things that must be done. No one can succeed who does not learn to do cheerfully tasks that he dislikes. All progress is made only by pain and suffering in giving up our natural desires and in struggling toward our ideal, which we see is right but do not yet love. Therefore, say these stern teachers, the truest kindness consists in training our children to do work that they do not like. We should not appeal to their interests, but rather to the right, and lead them to make their interests agree with what is right. The happiness of a child is of very little account if only he is led into the paths of righteousness. So hold the two extremes. Probably the majority of parents and teachers hold a middle ground, not believing either that the child should be wholly indulged or thwarted, and indulging or

thwarting according to their own particular likes. The mother who likes cabbage and does not like tomatoes, will usually feed her child the same way. The father who never lies, but finds it easy to criticise or backbite his neighbor, will probably rebuke falsehood but let backbiting go unscathed. The parent who dislikes arithmetic and enjoys history finds it easy to condone his child's stupidity in the first but not in the second. In all cases we seem to lack any standard by which we judge whether or not a given trait in our child should be encouraged, whether or not he should be given freedom to develop his own natural self.

Now it is unquestionably a difficult thing to know what we shall do in any given case. On the one side, we want our children to grow up good citizens, good members of the family, and seekers after righteousness. On the other, we do not want them to be confined, fearful, distrustful of self; we wish them to live a broad, free life, to feel the swing and delight of power, and to live with force and vigor. Between the two we stand puzzled.

Race interests vs. individual interests.

If what we have said of social recapitulation be true, a child is at birth a bundle of strong but vague impulses and instincts that have come to him from numberless ancestors, that press him into constant action in this way and in that, and that cause great unhappiness and dwarfed development if repressed.

We have had very elaborate theories worked out of these race-stages or culture-epochs, through which each child passes, and the proper studies for him at each stage, but such theories can not be said to have scientific value as yet. We can not say that because the race has gone through a certain stage, therefore the

child must go through it. We must instead study children, both individually and collectively, to see what race-stages they do repeat in fact, and the longer this study goes on, the more certain it is that only certain steps of race-progress are repeated in the individual.

Still further, the fact that a child is in a certain culture-epoch, does not mean that he must have only literature of that epoch to nourish his mind. It means rather that he is interested in the prominent *activity* of that period, and wants to go through that activity himself in the rough.

It would be strange indeed if these impulses were either entirely good or entirely bad. They are all survivals of a ruder civilization, and their value can be determined not merely by their antiquity, but by their adaptability to present-day conditions. The habitual criminal is looked upon to-day as a person whose interests belong in the ages when violence was necessary to self-preservation; but these interests are not suited to civilized life, and so their possessor must give them up, or go to dwell among barbarians, or be confined in prison. As a rule, however, these instincts and impulses are fluent enough to take the usual social channels. It is the task of the parent and teacher to provide outlets which will utilize these streams of energy, instead of damming them.

Direction better than repression.

The training of interests consists, then, primarily in directing impulse and instinct to a worthy end, by all means — suggestion, good surroundings, stimulation of curiosity, and so on. If an impulse can be so employed as to contribute to the family life, the best possible thing is done. If conditions do not allow of this, at least the

parents can take a rational attitude toward the children, instead of assuming that all the children want is to make trouble. We find, for instance, that as a rule parents are decidedly opposed to their boys digging caves. Under the usual conditions, where the cave is made a rendezvous for smoking and reading dime novels, there is good reason for objection. But are such conditions necessary? Surely not. So again, little children who run away do it usually because their own yard is so small and their companions are so few that they can not resist temptation. Instead of forbidding them the freedom, we should rather exert our ingenuity to make the freedom safe, for through such wanderings a child acquires valuable independence, gets a sense of direction and distance, and makes his first venture into the social world outside the home.

In general, then, we may say that we should not condemn a child's impulses unless they are of such a definite, fixed, and base nature as to work decided harm to himself or others. We should not try to *repress* impulses so much as to *direct* them into useful channels by suggesting to the children definite and valuable ends to be accomplished.

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CHAPTER XIII

Impulsive, Reflex and Instinctive Movements

1. Keep a record of the development in some individual child of the movements described in this chapter. (1) Impulsive movements. Note especially the posture of the baby in sleep. When does a child begin to sleep lying straight? (2) Reflex movements. Note especially whether, in cases of tickling or of brushing away an object, the baby uses the right hand or the hand on the same side of the body. That is, is he right-handed from birth, and if not, when does right-handedness appear? Note also the earliest inhibitions of movements. (3) Instinctive movements. Note especially to what degree the baby is impeded by long clothes. Watch for a climbing instinct. If possible, take instantaneous photographs of the nude baby's positions in learning these movements.

Observations.

2. Gather reminiscences from young people or adults of any one of the following instincts: migrating instinct (running away from home); hunting instinct; cave-digging instinct; tent-living instinct; collecting instinct. In all cases note:

(1) Age when the instinct developed.

(2) Length of time that it lasted.

(3) Circumstances that called it out.

(4) Strength. How much could it withstand in the

way of inducements to other sports, commands of parents against indulging in it, etc.?

(5) Is there any tendency to it now, such as hunting trips, camping, etc After how long a period is this?

With the discussion of movements we enter upon the last stage of our subject—the child's doing. Here, as in other cases, we are not preserving a strictly chronological order in our description, for as a matter of fact thinking and doing go hand in hand in mental development, each requiring the other in order for it to get beyond the rudimentary stages. So close is this connection that in the chapter on Perception we were obliged to anticipate this phase of the subject by discussing grasping in connection with seeing, and now in considering movements, we shall be referring constantly to the stimulus to movement given by the senses. **Introduction.**

In thus discussing feeling, thinking, and doing separately, we have been guided principally by the desire to show clearly the continuity of the development of each mental process from birth to maturity, showing, for instance, how the character of conceptions and of religious ideas develops as the child matures. In thus abstracting each mental process from the others in which it is embedded, we do as does the dissector, who follows out before his class the course of but one nerve or blood-vessel, ignoring for the time the complex of other nerves, blood-vessels and tissues that enmesh it. Such a separation is imperative for purposes of study, but it is only preliminary to the attempt to see as a whole the living organism in which each nerve and

blood-vessel plays its part. So now that the growth of the child's body and of his mind has been studied, as far as the present state of child-study observations allows, comes at last the consideration of how he, with his body as a tool, learns to express his thought; for in this expression the whole childish self is most clearly revealed.

Precedent to the child's conscious and voluntary expression of thought, however, is a stage during which he has little or no control over his movements. The activities at this stage do indeed express to us the baby's condition and his traits as a member of the human race, but he does not intend to express himself thus, and is unable either to make or prevent his movements voluntarily.

Impulsive movements.

Impulsive movements are also called spontaneous, random, or automatic. In the whole discussion of the subject there is great variety both in the terms used and in the meanings attached to the terms. Some writers class as instinctive what others call reflex, and others make instinctive movements cover nearly the whole range of human activities. In a book of this nature it would be useless and confusing to discuss and weigh such conflicting claims. We shall therefore imitate Tracy in using Preyer's classification, making the same reservation that Tracy does—that the use of Preyer's classification does not bind us to accept his theory of will.

Impulsive movements are movements resulting from changes within the motor nerve cell itself. They seem to require no stimulus from outside, and no sensory elements. Many embryonic movements are impulsive, and also many of the movements present at

birth, although their variety is not great. There are stretchings and bendings of arms and legs; spreading and bendings of fingers and toes; striking with the arms; stretching after waking; all sorts of grimaces; movements of the eyeballs before the eyes are opened; crowings and babblings; and the "accompanying movements," such as movements of the arms on hearing music or seeing bright colors or tasting agreeable food.

Direction of the movements.

The better the health and feeding of the child, the more numerous and vigorous are the movements likely to be. Their general use is evidently that they serve as exercises to prepare the muscles for later instinctive and voluntary action, and Mumford believes that they are also vestiges of movements that once were useful in the bodily economy but are no longer so. They are decaying instincts, so to speak.

Why they take the particular form that they do seems to depend upon the prenatal posture and the bodily structure at the time of birth, as Trettien shows. The arm and leg movements are at first always in line with the body, that is, forward and back or up and down, never out and in. In the case of the arms this seems to be due especially to the shape of the chest and shoulders. As the back straightens and the chest expands, side movements become easier. With both arms and legs, the up and down movement is also the most natural on account of the habitual posture of the baby. Trettien shows the habitual positions of arms and hands at great length thus:*

* The tables are based on different numbers of children, varying from 58 to 182. In all cases the tables are given in per cents.

Position	Male	Female	Average
Fingers—			
Clenched	83%	87%	85
Bent	12	4	8
Straight	5	9	7
Wrists—			
Bent	69	65	67
Straight	31	35	33
Elbows—			
Bent	100	96	98
Straight		4	2
Shoulders—			
Bent	66	68	67
Straight	34	32	33
Arms—			
Laid in front	98	92	95
Laid at side	2	8	5

The legs are habitually bent at the hips and knees, the feet crossed, the soles turned toward the median line and the toes curled down over the soles. The whole body tends to assume the curve of the prenatal position. With such an habitual posture for trunk, arms and legs, and fingers and toes, what other movements are probable except the stretching of the back, the unbending of arms and legs, and the spreading of fingers and toes?

These movements, as we can easily see, foreshadow the later movements—the arm movements those of reaching and grasping, the leg movements those of walking. We cannot so easily explain the extraordinary grimaces which often possess the baby's face at this time, but they probably mark the first paths of the facial expression which is to come later. We find that as voluntary movements increase, impulsive ones decrease in the normal person. Numerous connections between the sensory and the motor centers are formed by education and experience so that the trend of

development is away from impulsive movements rather than toward them. Yet Compayré maintains that some persist even in the adult.

Reflex movements differ from impulsive in that they require a peripheral stimulus to call them out, but, like them, no attention or idea is necessary for the performance. They are inherited, but the baby performs them more slowly and imperfectly at first than later. This is a decided advantage, for the baby has no power to inhibit movements for some time after birth, and if the reflexes were easily started, he would be subject to convulsions.

Reflex movements.

Reflex movements may be called out in the latter part of the prenatal life by gentle stroking or by changes of temperature. After birth, they are numerous. Most important of all is the group of periodic reflexes, under which come the various actions necessary to sustain life. To this group belong all the actions connected with respiration. Breathing is itself a reflex act, due to the stimulation of the air, and the cry of the newborn child is caused by the spasmodic action of the larynx when the air reaches it. At first the breathing is very irregular and rapid, sometimes almost ceasing, and then continuing with greater force and rapidity. In the seventh week there are about twenty-eight respirations to the minute; in the twenty-eighth month, about twenty-two, but even then a stimulus which is insufficient to wake the sleeping child will cause a rapid increase in the number of respirations.

Sneezing is possible even at birth, and with some babies takes the place of the first cry. Preyer produced it on the thirty-eighth day by pouring warm

water on the baby's forehead; and on the one hundred and seventieth day by merely blowing in his face. The baby's eyes are always closed in sneezing.

Swallowing is present even before birth. Coughing has been observed in the first hour; choking and hiccoughing on the first day; yawning on the seventh day; wheezing and snoring on the twenty-fourth day; and sobbing not until considerably later, about the seventh month in Preyer's boy.

Other important periodic reflexes are the heart-beat, the contraction and relaxation of the arteries, the movements of the bowels, and so on. Regurgitation, which occurs as early as the first week, should also be mentioned here.

Among reflexes that are not periodic should be mentioned the group of eye-reflexes. In describing the development of sight these were discussed, and so need only be mentioned here.

The entire body reacts to get rid of unpleasant stimuli, even from birth, although it requires a stronger stimulus then than later. The pain-reflexes are the least developed of all at birth. A baby can be pricked with a pin, even until the blood comes in some cases, without reacting.

But there is a stronger response to some other stimuli. Within five minutes of birth the toes will spread out if tickled, and, like the hands, will clasp any object laid within them. The reflex hand-clasp is one of the most remarkable for its perfection and strength. Robinson examined sixty newborn children and found that within one hour after birth they could all hang suspended from a stick by their hands, for a time varying from two seconds to one minute. Twelve

hung for one-half minute and four for one minute without crying or showing any signs of distress. The strength of grip increased up to the third week, when several hung for one and one-half minutes. Here there seems to be a distinct survival of arboreal life habits, when the baby had to cling to its climbing mother in order to preserve its own life. All the arm reflexes are stronger at first than the leg reflexes, and the arms are relatively more developed than the legs.

Other reflex movements occur to escape persistent stimuli. Preyer found that in tickling the temple the baby usually used the right hand to brush away the object; while Pflüger maintains that the hand on the same side is used as a rule.

At first, as mentioned above, a baby has no control over its reflex movements; they must follow when the stimulus is given, whether he wishes them or not. Preyer dates the first inhibitions between the ninth and twelfth months when the child begins to show some slight control over bowel movements; but, although observations are lacking, one may fairly question whether before this time there are not some inhibitions of arm and leg reflexes or of those connected with respiration. In all cases the control is irregular at first, and fails if the child is tired, inattentive or not well.

Instinct is differently defined by different writers, and the distinction between it and reflexes is by no means hard and fast. Instinctive movements seem to differ from reflex movements principally in being more complex and in having a less developed mechanism for their performance than reflexes have.

Instinctive movements.

Instinctive acts are inherited, that is, there is an inborn disposition to their performance, but they require a stimulus to start them, and they may be greatly modified or even suppressed by training. They are acts which have been serviceable to the race and are present to a greater or less degree in every member of it, but in man they vary so in their manifestations that it is almost impossible to know what actions have an instinctive root and what have not. There are, however, certain acts which are clearly instinctive.

In this list belong sucking, biting, chewing, grinding the teeth, and licking. Sucking comes the nearest of any of these to a reflex act, and is sometimes classed as one because brainless children perform it as well as normal ones. It is usually complete at birth, but in some cases has to be partially taught. It lasts in its full strength until the first teeth come, but as we have already noted, for a long time most objects go to the child's mouth to be sucked and licked before the child feels that he really knows them, and even the adult likes at times to put something into his mouth to suck. Licking usually accompanies sucking, and is present even on the first day.

Movements centering about the mouth.

Biting and chewing are instinctive acts which may appear as early as the fourth month, before any teeth are through. A baby will bite and chew his fingers, his rattle, the glass he drinks out of, etc. Grinding the teeth also appears to be a regular occupation. It may be done when but two teeth are through, but usually not until about the ninth month, when four teeth are through.

At birth the ability of children to lift their heads varies considerably. In some even on the first day, there is enough surplus energy to lift the head from its support; in others, not until the second or third week. The neck muscles are very small at birth, and increase in their growth to nine times their original size at maturity. At first the head, when unsupported, drops on the chest and rolls to one side. Preyer maintains that the dropping is not due to muscular weakness, but to lack of will, because even in the first week the head can turn to follow a moving light. This does not prove much, however, for the same muscles are not used in raising the head as in moving it from side to side.

Holding up the head.

Miss Shinn records that at the end of the first month her niece could hold up her head unsteadily for a few seconds, and by the end of the second month could hold it steadily and continuously. Preyer's records date the act between the eleventh and sixteenth weeks, while Demme's observations on one hundred and fifty children place the event between the third and fourth months for strong children; at four and one-half months for moderately strong ones, and in the fifth or sixth month for weakly ones.

The child has a strong incentive to hold the head up after the sixth or eighth week, for then convergence and accommodation of the eyes are established, so that he can see clearly. The attempts to raise the head not only strengthen the neck muscles, but those of the back and chest as well, so that they prepare the child for erect sitting, which follows almost immediately.

We have described the development of this instinct at length in the chapter on Sensation and Perception.

Reaching and grasping.

After the baby can see distinctly and has learned to hold his head up, he is very likely to resent being laid down in his crib, although before he was well satisfied with that position. Now he insists upon a sitting position, where he can see the fascinating world about him. This desire to sit up comes between the second and fourth months as a rule, and the baby will make all sorts of efforts to lift himself by a supporting finger, or by strain of the abdominal muscles. He is very unlikely to succeed, however, unless he is somewhat raised to begin with, for neither back nor abdomen are strong enough alone.

Sitting erect.

A baby who thus wants to see but cannot sit alone, should be provided with a cushioned support that will support and yet yield to movements, so that he can carry on his education without harm to himself. He will also get practice in sitting in his bath and in laps, and by some time between the fifth and eighth months will be able to sit alone on a hard smooth surface. By the eleventh month the baby's seat is firm, although when reaching for things he sometimes tips over.

Both Preyer and Trettien insist that a baby should rather be discouraged than encouraged to sit alone, and that the back should at first be supported by a pillow. Preyer says that he should not be allowed to sit up until he has proved his fitness by raising himself without encouragement from a prone to a sitting position.

The first sitting position is very awkward. Usually the knees are bent and the soles turned toward each other like a monkey's.

In learning to walk, there are several well-defined stages. In the first place, long before the baby makes any attempts to move from the place where he is laid, his legs as well as his arms make various movements. These are, as we have seen, impulsive at first, but later they become a source of great pleasure to the baby, and by the third or fourth month he is kicking up his legs as much as his elaborate clothing will allow. The movements become rhythmic and alternating, evidently an advance towards stepping, and by the seventh month, he will straighten and press his legs against an opposing surface and, if held up, begin to take steps. He also enjoys standing when supported. He is still, however, very far from independent walking, and goes through at least one preliminary stage, and often two or three, which are useful in strengthening the various muscles that will later be used in walking.

Locomotion.

When a baby is strong enough, if laid on his back, he will roll over onto his stomach, sometimes just for love of the movement, sometimes accidentally in reaching for an object. Mrs. Hall's baby turned from side to back in the ninth week, but not from side to side until the middle of the seventh month, and Miss Shinn's niece began her career of rolling near the end of the sixth month, and continued it with increasing vigor up to the eighth month, when creeping began. "She would now roll over and over in any direction, not to get anywhere in particular, but just for the fun of the thing. She varied the exercise with the most lively kicking, the heels raised in the air and brought down together with astonishing vigor and zest; or with twisting about and getting on

Rolling.

hands and knees, or even on hands and feet, prattling joyously and having a beautiful time all by herself for as long as the authorities would leave her alone."

Instead of rolling, some babies stumble upon hitching. They jerk themselves along from one side to the other, backwards or forwards, in a most ungainly fashion. Where there is hitching it may precede creeping, or may take its place. Trettien gives the following per cents, based on returns from seventy-five boys and seventy-five girls, to show the usual mode of locomotion: Of the one hundred and fifty children, 60 per cent of them crept, 30 per cent hitched, 7 per cent rolled, and 3 per cent crawled, humped, made swimming movements, etc. He does not note in how many of these children both creeping and some other form of locomotion preceded walking.

Creeping.

By the sixth or seventh month a baby begins to get up onto his hands and knees, and now and then to stretch or scramble for something that he wants. Some time between the eighth and eleventh months he begins really to creep. Here also we find all sorts of odd ways. Of the babies Trettien watched, 6 per cent crept backward at first. Both Miss Shinn and Mrs. Hall record this. It is due to the fact that the baby's arms are stronger than his legs and are predisposed to push instead of to pull, so that until he has learned to coördinate his movements, he pushes himself away from the object he wants, instead of toward it. Much to his amazement and displeasure he finds it moving away instead of approaching him. However, he soon learns better.

The relative movements of hands and knees are almost as varied as the number of these members will

allow. Some babies move with the opposite hand and knee down at once, but just as many move like pacers, with the hand and knee of the same side down at once. A fairly large proportion use arms and hands alone, dragging the body and legs; and almost as many go on hands and feet instead of knees. Others crawl like snakes, with the arms close to the sides and the legs almost straight; and still others hump like worms, drawing the legs up and then stretching the arms and body forward. In all cases there are, of course, many unnecessary movements made at first that are dropped by degrees.

Climbing.

We have already seen that even at birth the baby's clasp is strong enough to support him hanging, and that the first efforts to sit up are as a rule preceded by pulling himself up from a lying to a sitting position. The muscles of arms and hands are relatively stronger than at any other time of life, and we should naturally expect from this fact a stage when the baby's desire to use them would be marked, that is, a climbing stage. Preyer, careful observer though he was, does not even refer to such a stage, although he gives a detailed account of seizing. On the other hand, all the accounts of learning to stand show how important a factor is the ability of the child to pull himself to an erect position, and Miss Shinn and others have observed and described the climbing stage.

It seems probable that climbing is a genuine instinct, dating back to the time when men lived chiefly in trees, when strength of arm and grasp were essential for life. But in babies the instinct is so promptly repressed by fearful mothers, and so impeded by the baby's clothes, as is also his creeping, that the

discouraged child turns to some substitute instead of delighting in it as Miss Shinn's niece did. Such repression must be a hindrance to the development of the child's lungs and back, and therefore must work direct harm to his health. It is doubtless often difficult for the mother to give the necessary supervision to the climbing if it is allowed, but it can be done more frequently than it is, and should be planned for as far as possible.

When not repressed, climbing begins at about the same time as creeping, and is shown in the baby's attempts to climb over the person holding him, to climb into chairs and onto beds and table, and above all by his insatiate desire to creep up and down stairs. In the mounting process there is really little danger, if the thing he is climbing is solid, for his grasp is very strong; but in descending, the baby is likely to come head first like any animal that goes on all fours, and not being properly proportioned for such a form of movement, he falls. If a mother can be hard-hearted enough to let him get a few bumps, he soon learns to come down backwards, and then most of his dangers are over.

Although the desire to climb lessens somewhat after the baby has learned to walk, it is strong all through childhood, as is seen in the love that all children have for climbing trees, houses, and so on.

Walking

Even before the baby has begun to creep, we have seen that he is getting exercises preparatory to walking in his alternate kickings, in the steady pressure of his feet against opposing objects, and in the various half-standing positions that he assumes when held in the lap or supported on

the floor. He enjoys these exercises, but still he shows no desire to assume the erect position when left to himself until he has been creeping for some time. Mrs. Hall notes that in the thirty-eighth week, her boy pulled himself to his feet by the aid of a finger, and stood for a minute; in the forty-eighth week, he pulled himself to a chair and stood for five minutes, holding on with one hand and playing with the other, and two weeks later he stood so for half an hour. Preyer's and Miss Shinn's records correspond very closely with this, but all note that the baby does not feel very secure on his feet as yet. Demme's records show that vigorous children usually stand alone between the fortieth and forty-second weeks; moderately strong ones between the forty-fifth and forty-eighth weeks; and weakly ones about the twelfth month. Trettien says that the first standing alone may come at any time between the seventh and sixteenth months, and the first walking alone between the tenth month and the second year.

By the time that the child has become accustomed to stand alone, he has usually been given some lessons in walking and has been shown how to push a chair ahead of him. A baby will at first support himself by the wall or by the furniture in going for what he wants, but for a long time will drop down to creep when he comes to an open space. He can often walk well when supported by one finger, and alone when he thinks he is supported, for some time before he will walk alone if he knows it. There is a fear of falling with most children that hinders their walking.

Their self-consciousness is shown in very amusing ways. One little girl who had always held onto her

mother's dress while walking, one day seized the scallops of her own skirt and walked bravely off, performing a feat closely analogous to the famous one of raising oneself by one's boot-straps. Professor Hall's daughter chanced to walk alone for the first time when she had a pair of her father's cuffs slipped over her arms, and for several days she could walk very well with them on, but would not stir a step without them. When a child is not being constantly urged to walk, it is not infrequent for him to take his first independent steps without knowing it, in his eagerness to get something that he wants. But as soon as he realizes that he is going alone, while he may be very proud of himself, he promptly falls, and may not try again for some days or even weeks. Then suddenly he walks alone again, and each day makes large gains, until in a week or so walking is preferred to any other mode of locomotion.

Self-consciousness a factor.

The date when walking becomes well established varies greatly. Preyer puts it in the sixty-eighth week for his son; Mrs. Hall in the sixty-sixth for hers, and others at various times between the twelfth and thirtieth or even thirty-sixth months. Where there are a number of children in the family walking will be learned sooner, and of course a child can be taught to walk sooner than he will if left to himself. This is not a wise thing, however, unless the child is three or four years old, for a healthy child usually wants to walk as soon as his muscles and bones are strong enough to bear his weight. If he walks too soon, he is likely to be bow-legged or knock-kneed. If, on the other hand, a child has not learned to walk

When walking is established.

by the time he is three and a half or four years old, a physician should be consulted.

It is interesting to notice that when children first begin to walk alone, they want some object in their hands as they walk. Is it partly because they derive some feeling of support from it, and partly because they feel the lack of the constant stimulation of the palms that they had when creeping?

The first walk is very unsteady; not infrequently it is more a run, a trot or a waddle than a walk, and it is usually pigeon-toed. Nevertheless, undignified though it be, it opens to a child a new world both of vision and of movement. He gets new views of things when standing—views which are to persist through life; the freedom of his hands allows his handling and fingering of objects to go on at the same time that he is walking; and the exercise of his legs leads to marked changes in the bodily development. His appetite increases, his hours of sleep lengthen, and his general health improves, especially if he is a sickly child. His disposition is likely to become more amiable.

In describing these stages in locomotion we have proceeded as if the growth were continuous, but as a matter of fact it is not. Some movement will appear, be practised for a day or two and then be neglected for several weeks or even months. Then suddenly it will reappear and be practised diligently until it is learned. Walking is likely to be interrupted by the beginning of speech, and vice versa, so that the two processes of learning to walk and of learning to speak, which stretch over several months, have periods of waxing and of waning. As far as I know, no careful observations have been

Rhythms of growth.

made to see what laws govern this periodicity of growth, and it is a subject which would repay investigation.

The sexual instinct has already been discussed in a previous chapter, and hence will only be mentioned here. Its first important manifestations come, as we have seen, at adolescence.

Sexual instinct.

Closely connected with the instinct of sex is the parental instinct, which seems also to be the center of a large group of acts which are not commonly considered instinctive. We can hardly question that the care of the helpless young is instinctive, but we do not usually look upon teaching and philanthropy in all its forms as instinctive. What we know of social evolution, however, seems to point to the fact that altruistic activities in general have been the outgrowth of the instinct to care for helpless children. The original instinct has become so covered, so varied, and so modified in its expressions, that it seems a misuse of terms to call philanthropy instinctive; and yet, within the genuine philanthropist there is some impelling force that cannot be turned aside by reasons or difficulties or even his own willing. He springs to relieve the suffering even of the most worthless as the mother springs to snatch her child from danger.

Parental instinct.

From this standpoint, Mr. Phillips investigations as to the existence of a teaching instinct do not seem unreasonable. He found that girls play dolls and teacher far more than boys do. Out of one hundred and five teachers, fifty-one had desired from childhood to follow that profession; seventeen wanted to at the age of twenty-three; twenty-four were forced

to teach, but soon grew to love the work; and only four heartily disliked it. He concludes that teaching is probably a special form of the parental instinct, manifesting itself, as that instinct does, more strongly in women than in men.

Besides the instinctive movements already described, on which most writers are agreed, there are numerous other groups of movements which one or a few writers class as instinctive. Among these are the migrating instinct, which appears in the desire to run away that most children have; the hunting instinct; the burrowing instinct, appearing in fondness for cave-making; the swimming instinct; the tent-living instinct; the collecting instinct or the instinct for property, etc. Most children show these tendencies at some time in their development, and it seems probable that they are genuine survivals of ancestral traits, but so few observations have been made that we cannot give a connected account of them.

Other possible instincts.

Another group of acts is that which centers about the instinctive emotions—the *expressions* of fear, anger, delight, etc. These, as being closely connected with gesture and language, will be discussed in the chapter on Language.

Still other acts that are often classed as instinctive are language, play and imitation. There is little question that there are certain inborn tendencies in these cases, but the tendencies so seldom take definite channels, as genuine instincts do, that we may question somewhat whether it is not confusing to class them with instincts. There ought to be some term which should indicate that these acts are neither wholly

instinctive nor wholly deliberate, but have both factors intricately woven together.

Finally, we hear such terms as the religious instinct, the instinct for constructiveness, the instinct for work, where the feeling seems to be confused with the movements resulting from it. We are considering here only instinctive movements, not instinctive feelings and emotions.

Conclusion.

In the impulsive, reflex and instinctive movements so far described, the child has been presented as a member of a race only, not as an individual. Although there are variations in different children, it is still surprising how much alike all these movements are in all children, and at how nearly the same age they appear. They do indeed display the child's nature, as a social nature; but he is unconscious that he has a nature to express or that he is expressing it. On the physical side his energies are occupied in acquiring control of his senses and of the larger muscles of his body; and on the intellectual side, in the development of sensation and perception and the rudiments of memory, imagination and thought, in all of which he is repeating race-history. Nevertheless, conscious attempts to reproduce what others do, and to express his own feelings and thoughts begin very early in imitation and in language, and manifest themselves in increasing force in play, drawing, music, and all the other forms of childish expression.

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CHAPTER XIV

Growth in Control of the Body

1. To observe the increase in control of the muscles, compare children two, four, eight and fourteen years old. Note the difference in ability to move the fingers separately, either horizontally or up and down, to stand still on tip-toe, and to thread a needle. Observations.

2. Have children of different ages sort out colors, and note the differences in accuracy.

3. Have them tap a finger regularly, as long as they can, and note the differences in regularity and in length of time. In all these the fourteen-year-old child will probably be little, if at all, superior to the eight-year-old.

4. Notice whether the brightest children of your acquaintance are the quickest and the most accurate in their movements.

5. Provide your children with simple tools, needles, etc., of their own, and encourage them to make their own toys, playhouses, etc., as well as articles for use about the house. Show them how to use the tools, and see that they complete whatever they begin.

6. If you are observing one child systematically, give the tests mentioned in 1 at regular intervals, and take pictures if possible.

Leaving now the exclusively physiological side of the subject, we shall consider how a child learns to use

his body, and how much he improves from babyhood to youth. In many parts of our country a revival of all sorts of hand work is shown by classes in lace-making, spinning and weaving, carpentry, basketry, and so on. While there may be more or less of the fad in this, it is nevertheless very suggestive to the sociologist and to the educator, because it indicates a feeling of the value of "handiness."

Introduction.

Whether we look at the matter historically or logically, we can see that in the end our civilization depends upon our ability to control our bodies, especially our hands. Without such ability, neither literature nor machinery nor any other expression of thought is possible, and it is still an open question how much the power of thought itself is dependent for growth upon an organ that is adaptable, like the lips and hands, and how far it has created the organ by use. It is therefore valuable to study how the baby learns to use that wonderful organ of the mind, his body, and especially how both child and adult learn to use their hands.

In order to understand why a baby makes movements of one sort and a child movements of another sort, we must know something about the nervous system. The connection between the nervous system and the rest of the body is so close that for all practical purposes a man might as well not have a body as a nervous system that is seriously diseased. We see the truth of this especially in cases of paralysis, or of locomotor ataxia, but we do not often realize that the truth holds also for slighter degrees of disease. Weariness of any group of nerve-cells makes it difficult or impossible to use the muscles which those cells control.

Nervous conditions and bodily control.

A person suffering from nervous exhaustion, despite large, well-developed muscles, cannot walk a block without extreme fatigue. A tired woman cannot do fine sewing well; a tired child cannot write as well or speak as distinctly as when rested.

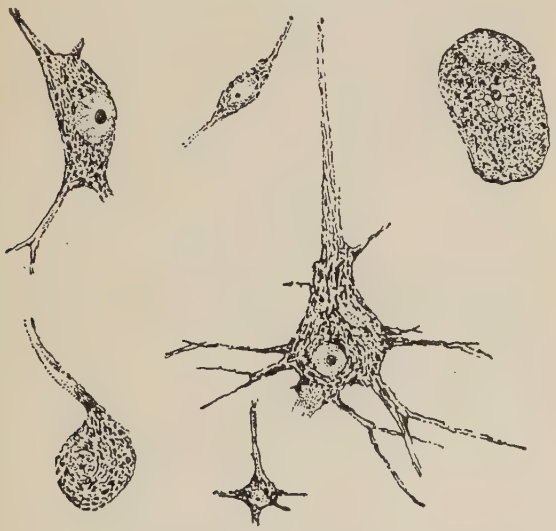


DIAGRAM 11. VARIOUS HUMAN NERVE-CELLS DRAWN TO THE SAME SCALE AND MAGNIFIED 300 DIAMETERS.

Structure of the nervous system.

It is not necessary, and it would not be profitable, to give a detailed account of the nervous system here. We shall only notice that it consists of nerve-cells and nerve-fibers; the structure of each is shown in Diagrams 11 and 12.

In general, the nerve-cells are found in the brain and spinal cord (the nerve-centers or central nervous system), and the nerve-fibers run through all parts of the body to and from these centers, as well as between the

various centers. One set of nerve-fibers (afferent or sensory) carries messages to the central cells, and another set (efferent or motor) takes back the direction for a movement in response, while a third set (connective) connects various parts of the spinal cord and brain with each other.

Each part of the spinal cord has control of certain muscles of the body, and the movements performed under its direction are called involuntary or reflex, because they occur without the interference of the will. Definite parts of the brain also have control of definite muscles, but the movements here take place with the consent of the person and so are called voluntary. Most muscles of the body may be controlled at one time by the cord, and at another time by the brain. The arrangement of the nerve-fibers which permits this double control is like this: a certain nerve-fiber, say from the big toe, passes from the toe to the lower part of the spinal cord. Here it enters a nerve-cell. From this cell at least two fibers pass out, one going back to the muscles of the toe, and one up to the brain. The one that passes up to the brain there also enters a nerve-cell, which has many connections with other brain-cells. If the response to the stimulus is sent back from the spinal cord, as is usually the case in the ordinary sensations from walking, the act is reflex or involuntary. But if consciousness and will are aroused

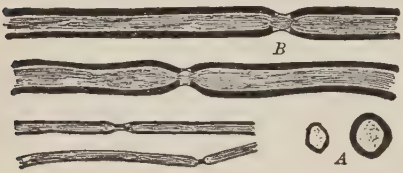


DIAGRAM 12. LONGITUDINAL *(B)* AND TRANSVERSE *(A)* SECTION OF A NERVE-FIBER.

by the message passing up to the brain, as when the toe is bruised, the act is voluntary.

The importance of well developed cells and numerous connective fibers is apparent from this brief sketch. They lie at the basis of all our acts. A child whose nerve-cells do not grow, or in whose brain few fibers of connection form, will be an idiot or an imbecile. The work of education is to develop numerous fibers of connection.

Development of the nervous system.

It has been well demonstrated that the nervous system develops in each child in approximately the same way that it did in the race. The lowest forms of animal life have no discoverable nervous system; neither has the human embryo in its first stages of growth. The simplest nervous system in animals consists of a little mass of nerve-cells with a few radiating nerve-fibers, and this is essentially the first visible nervous system in the human embryo. By the end of the fifth month of embryonic life, the number of nerve-cells is complete (see page 18). Thence growth proceeds in the following order:*

1. Connections between neighboring centers in the cord.
2. Connections between the upper and lower parts of the cord.
3. Connections between the cord and the medulla oblongata.
4. Connections between the hemispheres of the brain and the cord. This occurs just before birth.
5. Development of fibers going to the brain centers that control stimuli from the arms, legs and trunk.

*Flechsig.

This growth also occurs just before birth, and during the first month after birth. The special sense centers also develop just after birth, smell first and hearing last. By the end of the first month, these centers have all reached partial but not complete maturity.

6. The connections between the various parts of the brain develop to a very slight extent before birth, but after birth grow steadily.

The most rapid growth of the brain in *size* is from birth to the ninth month. During this time, one-third of the total increase in weight after birth occurs; the second third is added between the ninth and twenty-seventh months. The remaining third is added much more slowly, the brain reaching almost its adult weight by the eighth or ninth year. Practically all the growth of the brain after this age is in the development of connective fibers. How long the growth of the fibers continues, is still a matter of dispute, but it seems probable that it lasts up to the age of forty or even later. In old age the fibers deteriorate. In idiots and imbeciles, the growth ceases at too early an age, resulting in arrested development.

The baby's control of his body.

At birth a child has no power to make voluntary movements of any sort. When an arm or a leg moves, when his eyes close at a bright light, or when he starts at a loud sound, the movement is a total surprise to him, something that he can neither prevent nor repeat. He gets, at the most, vague feelings, without any knowledge of their cause or connection with each other, or with other feelings, and he does not as yet know the difference between feelings arising from his own

movements and those due to outside stimuli, such as light and sounds.

But these vague feelings become more distinct by repetition, and as the connective fibers within the baby's brain grow, the various feelings become associated with one another. The eye sees the aimless movements of the hand, and, after many accidental successes, is able to guide the hand to the mouth. The first accidental grasping of the breast in the aimless groping of the hand, gives a basis of feeling for the intentional reaching when the baby is hungry.

The wonderful change in a baby that usually occurs about the sixth month of his life is due very largely to his discovery that he can move himself this way or that as he pleases, and can direct his movements by his eyes. Thenceforward his time is devoted to learning how to do what he sees others doing. Imitation seems to be his sole end—imitation of sounds, of facial expressions, of movements of all sorts. In getting this control, the larger muscles, those nearest the trunk, are always the first that obey. The baby kicks and practises creeping before he undertakes to walk. Movements of the individual fingers are very few in babies, and even in children finger-control is very imperfect.

The child's control of his body.

The constant increase in the accuracy of feeling and in the rapidity and correctness of bodily movement is evident from numerous tests made upon school children. In the discrimination between colors, there is a steady advance, except at adolescence. The newborn child does not distinguish colors or even forms, but only light and darkness,

masses and bright places. Colors are probably not distinguished to any extent before the second year. Even kindergarten children frequently know only red, yellow, and blue, and do not even discriminate between shades of these. After six years of age girls are more sensitive to color than boys. Whether they are before that time, is a matter for future observation.

In other experiments made to test differences in accuracy at different ages, the object was to find the changes (1) in the ability to judge slight differences in weight; (2) in the control over the muscles as shown by the rapidity in making a movement like tapping; (3) in the quickness in responding to a stimulus. Both Gilbert and Bryan found that the ability to judge accurately of differences in weight increased gradually from six to twelve years, with the most rapid increase between six and eight years. From twelve to fourteen years, the boys were poorer than before, while the girls were poorer from twelve to thirteen. After these periods, improvement went on again with both boys and girls. The boys were slightly more accurate than the girls except between seven and nine, and eleven and thirteen years. In all cases, the rate of increase in precision lessens from year to year.

In the tests for muscular control and for rapidity of response, the same record was made. There seems always to be a certain rate of response for a given muscle with any one person, and the right side is, as we should expect, superior to the left, except with left-handed persons. There is found to be less difference between the two sides of left-handed boys and girls, than there is between the two sides of right-handed persons.

There is an increase in muscular strength, as shown by the hand-grip, from six years up, with a fluctuation for boys at the fourteenth year, and for girls at the twelfth year. After this temporary decrease, the boys' strength increases steadily but slowly. The girls' strength, on the other hand, decreases until about the sixteenth year, after which there is a slow increase.

Increase in strength: results of control.

In general, as a child gains more control of his body, he becomes better able to do different things at the same time with the two hands. Parts like the fingers, that at first were moved only with other parts, become more independent. There is also more ability to combine movements into long sequences, as in making mud pies, or building a house, or making a doll's dress. Finally, increase in the economy and accuracy of movements shows a close adaptation of body to mind, and a flexibility in the use of the body that is very desirable.

It must be noted again here that there is certainly some definite connection between periods of most rapid increase in muscular control and power of discrimination, and those of most rapid growth in height and in weight. The temptation is strong to connect the time of increase in weight with that of this increase in control and in discrimination. The evidence given by the figures at hand is not, however, conclusive on this point. There is need for more correlated observations.*

Relation to height and weight.

* It is interesting also to notice, although no practical use of the fact is evident now, that at eleven boys and girls and bright and dull pupils are almost alike in all respects. This age seems to be a neutral ground, a resting place, where all child-humanity meets on equal terms.

In watching over the adolescent, we should not for get that the period from the seventh to the ninth year is also an important one, showing all the fluctuations that adolescence does, though to a less degree.

In the light of all these facts about development, it seems probable that our present school gradings are artificial. The natural divisions would seem to fall about the seventh or eighth year, and the twelfth and fourteenth years for girls and boys respectively. Or, to state it more exactly, the natural divisions occur at the beginning of the second dentition, at which time there is a rapid growth of connective fibers in the brain; and at the beginning of adolescence, where there is another period of rapid growth of connective fibers. Previous to the second dentition, kindergarten methods, on a wider scale than now, seem advisable; that is, relatively little stress should be laid on book work, and more on hand work, and work which is not separated into distinct branches, but is closely centered about the home and neighborhood life.

Growth and school grading.

The new interests of the period, from the second dentition to adolescence, can be used for the systematic beginnings of the various studies of the curriculum. With adolescence and the awakening to social life that comes then, school studies, especially "the humanities," can be taken up with a new interest.

In speaking of the relation between bodily growth and mental ability, we said that the testimony was very divergent. Mental ability seems to bear no relation to weight and height except as the individual has been deprived of his chance to grow to his own proper size. But when we consider bodily *control* and mental

ability, we find all observers agreeing that the brighter children always have the best control of their muscles. We should expect this from the close connection between nervous health and muscular control on one side, and nervous health and mental development on the other. The person with an undeveloped brain has neither mental power nor bodily control. The idiot and the imbecile are conspicuously lacking in both respects. The dropping jaw, the lifeless hand, the imperfect speech, are as sure indications of mental defect as the inability to learn. The criminal, who is perhaps only another sort of imbecile, in like manner shows a lack of muscular control. In both cases the most successful treatment to secure both moral reformation and mental growth is to teach bodily control, first of the larger muscles and then, as soon as possible, of the finer muscles, through all kinds of hand work.

Bodily control and mental ability.

At this point we touch upon one of the most important questions in elementary education. Our prominent educators insist more and more upon the value of manual training in our schools. This includes work in wood, leather and brass, spinning, weaving and sewing, basketry, drawing, clay modeling, cooking; in short, everything that can be done by the hand.

Importance of the hand.

From the standpoint of educational theory, not all objects are of value in the making, but only those that typify certain permanent human interests and that are at the same time of such a material that the child's hand can reproduce them. Within this limitation, the utmost stress is laid upon the importance of children doing with their own hands, not for sake of teaching

them trades, but because such training develops them mentally and morally as no mere book study can. It is impossible to do justice to this position in a brief space, but we must state its connection with the various facts of nervous development that have already been discussed.

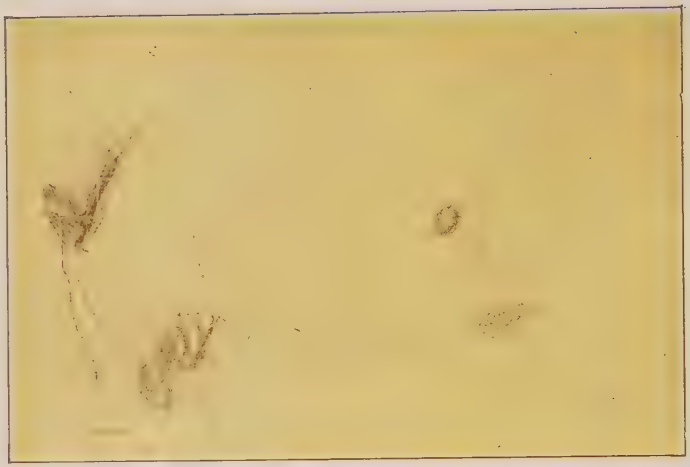
Essentials of a strong character.

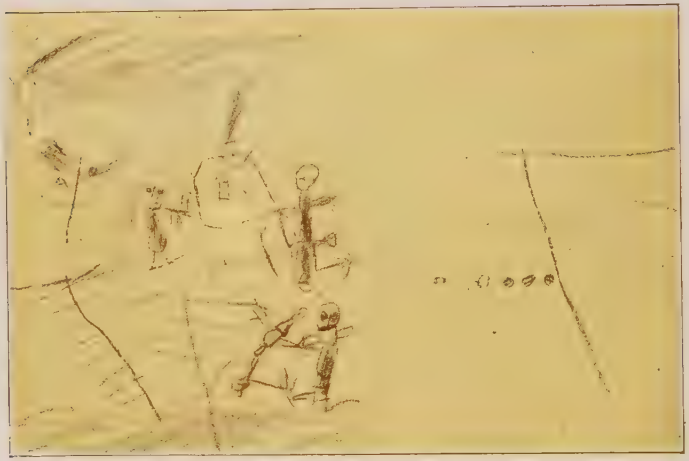
Three things are necessary for a strong character—sensitiveness, or ability to see all the sides and factors of a given situation; good judgment, or common sense in seeing what should be done, and ability or strength to do the right thing. The second of these, good judgment, is the intellectual side, and its development consists particularly in the cultivation of practical aims and worthy ideals. The first and the third belong to the province of feeling and will.

The making of a whole man.

Educationally it is much the easiest thing to get at a child from the intellectual side. We can easily have him learn words by heart or do a certain kind of reasoning, entirely apart from any value to the rest of his life. Our high schools and colleges are now turning out every June mental gymnasts who cannot take any share in social life at first, and whose motives are too often frankly selfish. Our present political corruption is far more closely connected with our individualistic and intellectual education than we realize. But we are coming to believe that the most important part of education is that children shall learn to understand the society into which they are born, and work for its improvement.

To make a whole man, a man who feels deeply and acts forcibly and well besides thinking logically, is therefore the problem of the new education.





KINDERGARTEN PICTURES*

Character	*Per cents*	*Character*	*Per cents*	*Character*	*Per cents*
Scenes	15	Series	1	Bears	68
Fragments	81	Houses	75	Girl	69
Interiors	1	Trees	37	Bears and Girl	46

* About one hundred children from each grade were asked to draw the story of Goldilocks and the Three Bears. This series shows the average of each grade.

Now, we assume that there are certain permanent and valuable purposes or ends that are found among all men, but take various forms according to the surroundings of a people. Among them are the desires for food, clothing and shelter, and the love of music and art, at least in a crude form. These desires are born in each child and are the center from which, through his social nature, he works out to an interest in natural science and in other people and other times. The instinct of imitation leads him to play at house, at hunting, at dress-making, reproducing in miniature the life about him. Thence he is led to question what people did for clothes when they had no needles, how they killed animals when they had no guns, and so on.

Development of interest in social life.

But, and here we connect with hand work again, when a child thus begins to question how a certain people lived or how a certain food is obtained or how a certain machine runs, the best understanding is obtained by his living the life, preparing the food, or making the machine; and the association fibers of the brain are most rapidly developed by this activity. A child has but a small store of memories to fall back upon and cannot construct in imagination with any accuracy such a process as weaving, even of the simplest kind. He must, at least in a crude form, go through the essential parts of the process himself before he can have the feelings and motor associations necessary for understanding it. Still more, by doing it himself, he is able to enter into the feelings and thoughts of the weaver. By planting and raising wheat, he not only understands farming better, but also the farmer. He is broadening his sympathies,

for the basis of all sympathy is ability to put oneself in another's place, and we cannot do this unless we have had the same experiences as he. This strong plea can therefore be made for hand work in our schools—that it will do away with the foolish notion that the trades are of less worth than the professions, and will train children to a genuine sympathy with all workers, thus leveling the artificial distinctions of our social life and helping to solve our labor problems.

Importance of action.

Finally, on the side of action, only acting will develop the skill, accuracy and patience which are essential things in the attainment of first rank in any profession.

From all sides it seems, therefore, that the expression in visible form of any valuable thought is necessary for the complete understanding of the thought as well as for the broadening and strengthening of the feelings and of the will. Accordingly, we would make an earnest plea to parents and teachers to do their utmost to give the children in their charge every opportunity to express their ideas. This does not require the introduction of expensive outfits in cooking, manual training, and so on, so much as it does ingenuity in using the materials at hand. Wonders can be done with a hammer, saw and jack-knife, with an old stove and a few tin pans, with a doll and some pieces of cloth, with weeds, pliable twigs and tough grasses, with sand, mud and clay. All these things are at hand for nearly every one. The important thing is that the children shall become accustomed to expressing their ideas.

Physically a child gets more and better control of his body as the association fibers develop to connect

various parts of the brain and cord with each other, and, on the other hand, constant attempts to do a certain act develop the nervous connection necessary for the performance of the act. **Conclusion.** A child who never attempted to walk or talk would never develop the nervous connections necessary for the complex combinations of muscles used in those acts. To a large extent, use makes the organ.

We saw that the nervous system consists of fibers that carry messages to the cord and brain, cells in the cord and brain that receive these messages, and fibers that carry back responses to the muscles, the three divisions corresponding to sensation, thought or ideation, and will. Ideation and feeling were developed in our savage ancestors in the attempt to maintain their uncertain existence, and are even in civilized man relatively incomplete unless carried on into action. Physiologically, the afferent fiber passes into a central cell which is connected with an efferent fiber, so that the tendency is always for a stimulus to call out a motor response. Both the argument from evolution and that from brain development, therefore, unite in emphasizing again the importance of the expression of ideas.

References.—For Bibliography see the references at the end of Chapter II.

CHAPTER XV

Imitation and Suggestion

1. Keep a dated record of some child's imitations during the first year. Note:

Observations.

(1) Their character. Compare the movements with reflex and instinctive movements.

(2) Their relation to walking and talking. Do they precede these or not? If not, is there a period of rest in the walking and talking when they begin?

2. Keep a similar record of some child between two and seven years old, or get observations on a number of children, following Miss Frear's plan as given in this chapter.

3. Try Mr. Small's experiment, or a similar one. This is very easily done in any room where there is gas or a coal-stove, by pretending to smell the gas, or with other materials by pretending that meat is a little tainted, or milk a little sour, or butter a little strong.

Theories of evolution.

It often happens that the value of a theory lies no more in its explanation of the class of facts with reference to which it was first stated, than in its application to quite another class. The theory of evolution, first systematically propounded as a theory that different species of animals pass into each other by gradations, has been widened to the idea that all physical life exhibits a graded series of forms originating from one or a few

simple forms; and is now being applied to mental life both brute and human.

This gives us, in reality, two theories of evolution—one of the body, and another of the mind, and it has been a favorite assumption of both biologists and psychologists that the two series of facts run parallel, and have no causal relationships. They would say, for instance, that when you will to move your hand, the hand moves, not as the result of the willing, but as the result of certain changes in nerve and muscle which are entirely independent of mental processes. The two series of processes run beside each other, but never cross.

This theory served for a brief time, as it had the practical advantage of averting metaphysical and religious discussions upon the nature of mind, but as the evolution idea has been worked out in more detail, it has become constantly more evident that there is some definite relation between the complexity of the bodily functions and structure, and the presence of mental activity. This can not, indeed, be proved in all its details; there are gaps and discrepancies here as in the theory of evolution itself; and yet, when we take a view of the course of development as shown by such writers as Spencer and Romanes, the conclusion is almost irresistible that the development of the mind has proceeded with equal steps and by the same laws as the development of the body. It is a strikingly simple conception that the mind has obtained its present modes of activity by responding to the demands of its environment. The animal that was able to retain in memory some painful or pleasurable experience so as to avoid or secure it again, was the

one best adapted to its surroundings and so was the one that survived and passed down this form of activity to its descendants. Thus were developed sharpness of perception, imagination, attention, and thought itself, and developed only in response to stimuli, as the best preliminary to action. Mental activity, then, on this theory, has its origin in some want of the animal, and its end in some act which is supposed to satisfy that want.

James says that "all consciousness is motor." To understand better what this quotation means, let us turn to the development of the nervous system. We find here, that, in general, the men with the greatest mental activity are men with the best developed nervous system; and that this is true all the way down the scale of life. The animal with little or no nervous system, like the oyster, or the clam, has little mental activity. We find also that uniformly in the nervous system there is a connection between those brain cells that receive a stimulus, and those that send messages out to the muscles of the body, so that every impression received tends to call out some muscular response; in other words, "All consciousness is motor." Every idea, even, is reflected in the muscular system and so makes some change in the body. This is shown in a multitude of ways.

"All consciousness is motor."

1. Professor Mosso, an Italian, has made careful experiments to find out what is the effect upon the body of stimulations that arouse emotions, and also to discover the bodily changes caused by changing ideas. He found that when various substances were put into the mouth or when the skin was touched or the eye stimulated, there was always some corresponding

change in the circulation and respiration. He also found that mental work, such as sums in mental arithmetic, changed the character of the breathing and circulation. These changes were measured by means of a registering apparatus, so that the matter is proved. Mr. Gates of Washington, further investigating this point, has discovered that every emotion causes changes varying with their character. Thus there is one kind of perspiration for fear, and another for joy.

2. Such facts as those of muscle-reading prove the same thing. In muscle-reading, there is always physical contact between subject and operator. The operator knows where an object is hidden which he wishes the subject to find, and he keeps his mind fixed on the place where the object is. This fixing of attention leads to involuntary contractions of the muscles that guide the subject toward the place, if he is sensitive enough to perceive them.

3. The facts of hypnotism are too well-known to need description here. We mention hypnotism because its essential characteristic is that the subject is in some way given an idea which fills his consciousness, and therefore *must* be carried out into action. What is called the "control" of the hypnotist over the subject depends entirely upon how well he can fill the subject's mind with the ideas which he wishes him to act upon.

4 There are many facts in our everyday life that illustrate the same thing. When there is no conflicting idea in our minds we act upon any idea that comes into it. If we see a pencil, we make marks with it; if a pin is on the floor, we pick it up; if we put on our hat, we also put on our coat and gloves, and so on.

Habitual acts come under this head; the act once started is finished because we have no opposing idea.

This carrying out into action of an idea that in any way enters the mind, depends, we have just said, on the absence of conflicting ideas. This, in turn, depends upon the number of associations that one has with an idea, and the amount of attention fixed upon the idea. The more the attention is fixed, the more likely is the idea to be carried out; and the fewer the associations, the less likely are opposing ideas to rise. Children have fewer associations than grown people, and hence believe everything that is told them. Their attention is also easily attracted. On both accounts, then, the tendency is for them to carry out into action at once anything that attracts them, and therefore children are more imitative than adults.

Condition of imitativeness or suggestibility.

Imitation means, in its widest sense, the copying of some idea received from some person or object, in the form in which it was received. Thus one may imitate the pose of a statue, the bark of a dog, the movement or the voice of a friend. One may also imitate motives as far as one knows them.

The questions immediately before us are these: When does imitation rise, and when ebb? How strong is its power over the child? What does he imitate? And what use can we make educationally of this tendency?

Imitation is now usually classed as a genuine instinct. It is an inborn tendency common to all children, but undeveloped at birth. At first, a child's acts are reflex and involuntary, and not until between the ages of four and six months does real imitation

begin. From that time to the age of seven, imitation is the principal means of education. This is simply another and more specific statement of the fact that all consciousness is motor. There is some bodily change in answer to any stimulus, and in imitation, the body only reproduces in the same form the stimulus that it receives.

Rise of imitation.

Preyer remarks that the very first imitations of the baby are imitations of movements that he already knows and does without any such stimuli. In the case of his son, it was the pursing of the mouth, and occurred in the latter part of the fourth month. Miss Shinn notes for the same time some possible imitations of sounds but is dubious about their being true imitations. Even if there are genuine imitations at this early age, they are infrequent, and the most patient encouragement of the child will not call them out except to a very limited extent. The connective fibers between the sensory and motor brain regions, which are essential before imitation can occur, have not yet developed to any great extent, and do not until about the ninth month, at which time imitation becomes much more frequent. In the sixth or seventh month there are some clear cases of imitation, but even then they are relatively few, while from the ninth month on, the baby imitates all sorts of movements and sounds—combing his hair, shaving himself, sweeping and other household tasks. By two and a half years the child is into everything, imitating his elders and wanting to help in every way. The great development in the ninth month certainly has a close connection with the rise of creeping and language and the growth of perception, but we lack observations which would reveal

the exact order of development and the causal relations between these processes.

In these first imitations, the child imitates most readily the movements that he already performs reflexly or instinctively. Beckoning or waving the hand in "bye-bye" is one of the first imitations, and in the beginning is only a repetition of the natural movements of the arms. But even before such a voluntary imitation occurs, the child is very likely to reproduce unconsciously movements or sounds, such as a smile or a cough. Later he will also do this, but when asked to do it, either does it very poorly or not at all, and always hesitates for some seconds before he can get the necessary movements started.

Imitation being well developed by the second year, the question is of great interest as to what the child imitates and how he does it, and investigations have been made of which the following is Miss Frear's summary:

What a child imitates.

	3 YEARS	7 YEARS
What the child imitates:		
1. Animals	5%	10%
2. Children	10	10
3. Adults	85	80
Kind of imitation:		
1. Direct	35	15
2. Play	50	80
3. Idea	65	75
The characteristics imitated		
1. Speech	15	10
2. Action	70	80
3. Action, speech and sound	75	60

Now it is both interesting and important to notice that 85 and 80 per cent of the child's imitations at three and seven years, are of "grown folks," and this

is still more important when we add, what is not given in the table, that most of these are imitations of the teacher's actions and speech. It seems difficult to overestimate the influence of the teacher over the child less than seven years old. After that age, imitation becomes less prominent because, as a child gets more ideas, he has more things to choose from and is more likely to combine them in ways of his own.

We should notice also that by the time the child is three years old, the direct imitation of movements and sounds, which is his only mode of imitation at first, constitutes only 35 per cent, and at seven years only 15 per cent of his imitations, while play, which allows change and invention, constitutes 50 to 80 per cent at the two ages; and imitation of ideas, which includes many plays, is the most important factor. This change from imitation of movements to imitation of ideas in play, is coincident with the development of memory and imagination that we have already described, and with the beginnings of questioning.

The large proportion of imitations of movements marks once more the necessity so often mentioned, of giving children plenty of freedom for activity; while the numerous imitations of adult activities strongly emphasizes both the social nature of the child and the ease with which education can at this time introduce him to the work of the world in a play form. The more we study the children themselves the more do we become impressed by the fact that a grown person who is unsocial and lazy is one who has been warped from the natural order of growth.

Imitation has been classified in various ways. First there is the division into reflex and voluntary. In

reflex imitation one simply copies, without reflection, any movement one happens to see. One child yawns, and then another; one coughs, then another, etc. Voluntary imitation, on the other hand, selects and tries to imitate the copy, as in copying a drawing. This division corresponds, in the main, to the distinction between simple and persistent imitation. In simple imitation, a child repeats some movement without modifying it in any respect. Usually he copies it only once, because he does not get interested in the act and so is not stimulated to repetition. Such imitation has little educative value. In persistent imitation, however, he does find the copy interesting and is stimulated to repeat the movement again and again. As a typical case of this sort, Baldwin gives the illustration of his little daughter imitating him in taking the rubber of a pencil off and putting it on again. She would do this for half an hour at a time.

Kinds of imitation.

Here we must note one point which will save much defective teaching if kept in mind. Are the children doing the same thing over and over in this repetition of the act? To us they appear to be, because they get the same result, but if we examine the acts more closely, we shall see that this is not the case. The first time Helen tries to put the rubber on the pencil, she probably does not succeed, although she tries very hard. She keeps on experimenting, making different movements with her fingers and the pencil, until she happens to get it on. Then she pulls it off and tries again; this time she succeeds more quickly and easily, because she leaves out many unnecessary movements. And so each time

Value of repetition.

some movements are omitted and better control of the rest is obtained until the child is satisfied and stops. Each time the act is somewhat different from what it was before, and each time the child learns something. The entire process of repetition is the best method of self-education that could be devised, and should not be stopped.

The writer has been told many times that there are usually one or two songs or games which a child chooses to play ten times, where he chooses others once. Often we can not see why he should like that particular song or game so well, but it would seem that it must exercise certain muscles and develop certain organs and so give a deep satisfaction to the child who chooses. His choice may not always be one that suits the majority of the children, however, and so he can not always be gratified.

This enjoyment is also due in part to the great enlargement of a child's range of actions. By far the largest part of our movements are acquired by imitation, and so when a child sees a new movement and begins to imitate it, he finds a new self in his body that he has never dreamed of before. He gets a large number of new and delightful feelings, and, most glorious of all, he finds that he can get those feelings as often as he pleases by simply making a certain movement. He becomes master of himself through imitation, and the delight obtained from this beginning of control is the direct incentive to voluntary effort and to voluntary attention. Imitation is the developer of will power.

It is not the thing that is accomplished by the movement, but the feeling of the movement that delights

the imitative child, and so he repeats it until he becomes thoroughly familiar with the feeling, and then discards that copy. So, also, he is satisfied with any makeshifts in his imitation if only they allow the right movements. Thus we find a little girl of three years washing her doll's clothes without water; ironing them with a cold iron; and mending them without holes. Another papers the wall with imaginary paper and paste, using a clothes brush for a paste brush to help out his imagination.

Satisfaction in movement, net result.

Because all the child wants is the new feelings in the movements, we find also that esthetic motives seem to have little value in deciding what children shall imitate. Repulsive things are as attractive as beautiful. Children imitate deformities and disease. There are numerous cases of children impersonating lame people, humpbacks, blind people, drunkards, etc., not at all in a spirit of mockery, but just as they imitate everything else. To show how strong this copy may be, we have in mind a case of a little girl of five years who visited a sick cousin. For more than a week after coming home, she played she was sick. She made some bread pills, which she took regularly, and every little while she would lie down, cover herself up, and act as her cousin had acted. It is rather difficult to know what to do in such cases, for we can not prevent children seeing such things, and we do not wish to repress the spirit of imitation. Can we not make the children realize that the humpback suffers most of the time because his lungs, heart, etc., are pressed out of place by his curved spine? And that the drunkard is himself wretched and the cause of wretchedness to others? That is, we should replace the superficial knowledge of

the child by a deeper understanding and he will lose his desire to imitate such things.

This leads us to another important characteristic of imitation; *viz.*, its social nature. We have said that through imitation a child makes acquaintance with his own body and gets control of it; it is equally true that by imitation he makes acquaintance with objects and persons. When a child imitates the movements of another person, he reproduces thereby in himself the same state of mind in part as that of the person whom he imitates. We have seen in our study of the emotions, that if we assume a certain position, the corresponding emotion is likely to come, and this is also true when the movement is imitated. Our little copyist is able to put himself in another's place by imitation, and at first only by imitation. Imitation therefore is the basis of sympathy as well as the developer of will and attention, and the agency for giving us self control. Truly, it hardly seems possible to exaggerate its importance in the mental development of any child.

Social value of imitation.

Therefore let a child imitate freely, and do not fear that he will become a slave to outside influences. Rather, he is laying the foundations for future originality because he is gaining that knowledge of others and control of himself without which no invention is possible. Imitation is the germ of the adventurer's spirit, from which in later life will bloom discovery, invention and imagination.

The transformation from imitation to originality comes as his improvement in his imitation increases, until the original movement serves only as a hint for starting. The factor of imitation is, no doubt, still

there, but is covered up more or less. This change comes, apparently, when the child has imitated until the act is easy, and hence requires so little attention that he can expend the mental energy thus set free in adorning the act, so to speak. Then imagination comes to the fore, and suggestion is invaluable. The place of imitation, accordingly, would seem to be in getting technique. It is a great advantage to a child who is drawing to see how to hold his pencil and how to make a clear line, and it certainly does not interfere with his individuality. The mistake that we all make lies here rather,—we insist upon giving him an *end* to copy that is outside himself, whereas the end should be the expression of his own personality, and should be chosen by himself. At the same time, it is often true, no doubt, that a child does not know what he wants to do, or wants to do a thing that would harm him. In such cases suggestion must come in.

Relation to originality.

We are very much afraid nowadays—at least many of us are—of destroying a child's spontaneity if he imitates much. There can be no doubt that children have been and are repressed far too much by school formalities, book study, and so on, but free imitation has nothing to do with such repression. Free imitation is as much a part of "free play"—the watch-word of educational individualism—as is invention or imagination. Once more we would emphasize the fact that the development of a child proceeds best when he can freely choose what he will do, but we would also emphasize the other fact of which we sometimes lose sight, that what a child thus freely chooses to do is almost invariably something that he sees going on in

the life about him, and that the wisest educator is the one who so arranges the child's surroundings that the things to hold his attention for imitation are those which will best educate him. The child who persistently does not imitate is usually the incipient criminal. He is the unsocial child.

Since the child of this age is so willing to take up in imitation whatever the teacher may suggest, the best kinds and modes of suggestion come up next for our consideration.

Importance of suggestion.

Suggestion is used here in the sense of any thought or act that may be acted upon by a person. Suggestion then takes many forms, which may be graded according to the degree of clearness in the idea suggested.

At the bottom of the list Baldwin puts what he calls physiological suggestion. Examples of this are putting a baby to sleep by patting it, by singing to it, by putting out the light, learning to lie in bed when asleep, and so on.

Physiological suggestion.

In such cases, an association is formed between a certain stimulus and a certain act, but the child has no clear idea of the act that follows, and it can not properly be called imitative. The forming of associations here is, however, a very important matter, and one that is absolutely under the control of the one who has charge of the child, if the child is healthy. If a child is healthy, it is simply folly for its mother to accustom it to constant attention and coddling in order to keep it good humored, or to put it to sleep. Most babies at first will go to sleep as readily if left alone in a quiet, dark room as if sung to sleep by a bright light. So with all bodily habits, especially after six months.

By regularly putting the child into certain positions, associations are formed between them and definite bodily reactions, and the reaction always follows. The extent to which this is true is shown in odd examples. I have heard of one little girl who could not go to sleep unless she saw a towel with a red border put under her pillow, and then she would drop off at once. Another had to embrace a certain book on theology.

Let us now turn our attention to other methods of offering suggestions and the advantages thus gained.

Suggestion through ideas.

That suggestion is strong among school children is shown in the experiments made by Mr. M. H. Small. He wished to see if he could not create real illusions by giving the children the right ideas. Accordingly he tested a school of five hundred children of all grades up to High School, in this way: he took into the room a bottle of perfume with a spray attached and also a perfumed card; he had two or three children come to the desk and smell of each. Then without the children knowing it, he substituted water for the perfume, and a scentless card for the perfumed one. He then sprayed the water into the room with every expression of enjoyment and was joined in these by practically the entire room. Seventy-three per cent of the children thought they could smell the perfume. He tried similar experiments with taste and sight, deceiving respectively 88 per cent and 76 per cent of the children. The deception was greater among the younger children than among the older.

This tendency to accept and imitate the attitude of the teacher is due, as we have said, to the lack of conflicting ideas in the child's mind, and therefore the

most essential thing in persuading is to prevent the rise of these. "A strong will," says Guyau, "tends to create a will in the same direction in others. What I see and think with sufficient energy, I make everybody else see and think. I can do this just in proportion as I believe and act my belief." The first essential for success in teaching, therefore, is enthusiasm and a conviction of the importance of the work. The next is belief in one's own power to succeed, for thereby one gains poise and the power to assert oneself calmly and authoritatively, both of which are necessary to the teacher.

Value of strong conviction.

Beyond this, the teacher must make herself a model fit for imitation by the child. Her position of authority in the school fastens the child's attention upon her irresistibly for the time that he is with her, and imitation of her is as inevitable and unconscious as breathing. First of all she must "sit up and look pleasant." She must carry herself well. It goes without saying that her dress must be neat, but it is equally important that it should be tasteful. A teacher who wears ugly colors or bad combinations of colors, is a stumbling block to these little ones, in a very real sense, for she is training them to do the same thing. So also it is inexcusable for her to use harsh, shrill tones in speaking or singing. She must modulate her voice so that it will be low and sweet.

Importance of good breeding in teacher.

The degree to which all the physical peculiarities of one person are imitated by others, is greater than is commonly appreciated. Coughs, stammering, hysterical attacks, carriage, peculiar gestures, and facial

expression, all are imitated. The teacher who wears a worried frown soon has a frowning school.

Less observable but more important is the effect upon the child of the teacher's mental and moral attitude. Only from the standpoint of the power of suggestion do we appreciate the full importance of believing that a child is good, and of letting him know our belief. "Convince the child that he is capable of good and incapable of evil, in order to make him actually so." A child, and even an adult, unconsciously to a large extent, imitates the copy of himself that is held before him. Suppose a child has misbehaved in some way. With a little child, the chances are that his intention was not wholly bad, and if we assume that he was mistaken in his act and not willful, we can often change the intention. Say, "Now see how others would misunderstand you, though you did not really intend to do wrong," or "See how you have hurt him, but you did not mean to," and so on. The little recreant will find it harder *not* to live up to this copy than to imitate it, as a general rule. So generally, when the selfish or narrow side of a child's nature comes to the front in an act, do not make it definite and clear cut to his consciousness by talking to him about it, but rather emphasize first its unhappy results, and then the good results which rise from another way of acting. Make the child conscious of the good tendencies but not the bad, unless he is evidently doing wrong with full consciousness of it. Then remonstrance and discussion are in place, as we have already said.

Value of belief in child.

Every movement of the teacher is a suggestion to the pupil. If she expects bad behavior, she calls it

out by her attitude of suspicion. Her eyes, head, hands, all declare her expectation, and give rise to ideas of mischief that otherwise would not enter the child's mind. In the same way, we find that children usually care most for the subject that the teacher likes. When she loves nature and the beautiful, every suggestion is of their attractions, and she can carry the the pupils over numberless obstacles by reason of their imitation of her enthusiasm. Her own feelings, with their concomitant actions, are reflected in her pupils. Such things are "catching."

We see here also why a negative suggestion is less valuable than a positive one. If I say "Johnny, don't put the beans in your nose," why is it less valuable than to say "Johnny, put the beans in your pocket"?

Negative suggestion bad.

Evidently, in the first case, Johnny's attention is fastened on the beans and nose, and he is at the same time left inactive. The natural thing is for him to act on the idea presented. In the second case, his attention is fastened on a useful idea and he is given something to do. The different methods of treating a child who gets hurt are in the same line. Why is it better to make light of the injury? Evidently because this gives the child a good copy to imitate. I have seen a mother work a child into a fever of crying when she fell down. The child picked herself up quickly enough, rubbed her head a little and was beginning to play again, when her mother rushed upon her thus: "You poor darling, did you fall and get hurted? Naughty, wicked ground to hurt my little girl!" Here she stamped upon and beat the ground. "Just see what a horrid, dirty hurt it made on my dearest's face!" The

child's lips began to quiver and soon she too was angry and crying. This particular mother is worse than any one I have ever known, but all of us are too likely to give the child something negative or bad to copy instead of something good.

Another source of much trouble to a child is that we give him many different things to copy which do not agree with each other. Says Jean Paul: "If the secret mental fluctuations of a large class of fathers [and we should add teachers and mothers] were brought to the light of day, they would run somewhat after this fashion: In the first hour the child should be taught morality; in the second hour, the morality of expediency; in the third hour, 'Your *father* doesn't do that'; in the fourth hour, 'You are little, *only grown* people do that'; in the ninth hour, 'Do not make so much noise'; in the tenth hour, 'A little boy ought not to sit still doing nothing.'" Is it surprising that with many of us morality is but unreasoning custom? If we do not live a consistent life before our children and if they do not find the same results following the same acts, how can they ever believe in a truth and justice that are eternal?

Inconsistency.

If what we have been saying of the power of imitation and suggestion is true, we must reach the conclusion that our children's defects are far more due to the imperfect copies that we furnish them than to any original sin in the children, and that the first and most essential preparation for teaching and parenthood, is to make our hearts clean and our spirits pure.

Conclusion.

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CHAPTER XVI

Language

1. Keep a dated record of the order of development of vowels and consonants; of clicks, grunts etc. Observations.

2. Note when gestures begin to be used to get what the child wants. What gestures are used? What are first used? What are most frequently used?

3. Note when the baby begins to understand speech. Be careful here not to confuse knowledge of the word with knowledge of the gestures. To be sure that the baby understands the word, it must be spoken without gestures or any unusual inflections.

(1) When does he know his name?

(2) The names of the people that he sees most frequently?

(3) The names of any objects?

4. The beginnings of speech. Keep a record of the first words used with meaning, spelling them as they are pronounced and classifying them as they are used, not as classified in a grammar.

Such a record can be made for children of any age.

5. Keep a record of the color vocabulary from the time when the child first names a color correctly.

6. Keep a record of the first sentences, noting the order of the words.

7. Collect accounts of words and languages invented by children.

One of the characteristics of man that has attracted much attention and been the cause of much discussion is his ability to use language, that is, to communicate with others. In this, its most general sense, language is not limited to words, but also includes gesture, drawing, which originated in gesture and whence written language was derived, and any cry that has meaning, whether it be articulate or merely the cry of rage or pain.

Instinctive expressive gestures.

Within a week after his son's birth, Preyer noted the turning away of the head when the baby had sufficient food. This is the forerunner of the shake of the head in denial. In the sixth month, arm movements were added to this, which looked like pushing away the object, but they did not clearly have that purpose until the fifteenth month and then were probably imitated.

In the first turning away of the head, the movement is expressive of the fact that the baby has had all that he wants, but of course he has no intention of communicating with others by the movement. The movement is as instinctive as sucking itself, and is important here only because later it is used as a sign by which to express thought.

During the first months of life there are a number of instinctive movements which are also expressive and which are the basis for later gestures and words. Among them are the instinctive expressions of pain, weariness, fear, anger, astonishment, joy, desire and pride. These are not all present at birth, but appear before the end of the first half year.

The first tears, which may express weariness, pain, fear or anger, appear between the twenty-third day and the twentieth week. The characteristic transverse

wrinkling of the forehead in grief, appears early and also the peculiar parallelogram-shaped mouth, and putting up the lip.

The first smile sometimes comes even in the second week, but is likely then to be only an impulsive grimace and not expressive of satisfaction. By the end of the first month Preyer found that it was always associated with comfortable conditions, and in a few months arm movements regularly accompanied it. Darwin puts the first smile as late as the seventh week, and the first laugh in the seventeenth week. Preyer puts the first laugh at nearly the same date as the first smile. The laugh also is later accompanied by arm movements. It became much more noticeable in his son in the eighth month, and then was at times imitative. Laughter passing into tears, he never observed in children less than four years old.

The characteristic look of astonishment appeared in Miss Shinn's niece in the sixth week, on tasting some new food. This also is hereditary, and one of its important factors, the horizontal wrinkles of the forehead with wider opening of the eyes, is traced back by Darwin to the attempt to see better the object causing the surprise.

Fits of rage or anger, with stiffening of the body, and striking out and kicking, appeared as early as the tenth month in Preyer's boy.

Desire is very early shown in the cry, and to this is added, about the fourth month, stretching out of the arms to the thing wanted; and still later, the putting of the hands together as if to grasp the object. Between the eighth and twelfth months, pointing is gradually developed from this.

Expressions of affection, such as kisses, pats and hugs, are imitated, and do not appear until about the sixth month, at which time also a real gesture language is likely to begin.

Gesture, or the sign language, is common to all men and is used by animals almost as much as the inarticulate cry. It seems to be of almost as wide application as the cry. The dog's entire body is unconsciously eloquent of his mood, and even consciously he makes a limited use of gestures in trying to attract attention or to persuade man to do his wish. When we come to man, we find that the natural sign language is strikingly similar in all parts of the earth. An Indian can make himself understood anywhere that the sign language is commonly used. Deaf mutes, who have not been taught the conventional sign language, and Indians understand each other without difficulty.

Voluntary gesture.

We can hardly question that gesture, aided by a few half-articulate cries, was the first language, and for a long time was more prominent than speech in men's communications. So we should expect to find, as we do, that in each baby's development, gestures come to have significance before words do.

At about the same time that imitation begins, significant gestures arise. The six-months-old child tugs at his mother's dress when he is hungry, holds out his arms to be taken up, and learns to wave "bye-bye" and go through the various baby tricks. A little later he begins to invent gestures. All kinds of begging and coaxing gestures, attempts to attract attention, appear.

The use of nodding to mean yes is not seen until between the twelfth and fifteenth months, and is

probably not hereditary as shaking the head is, although Miss Lombroso so classes it. It does not appear until long after shaking the head does, and is probably imitative.

In this use of gestures, the baby is at one with primitive man, uncivilized peoples of to-day, deaf mutes, and aphasic patients. There seem to be certain common or root gestures which all men who have no speech or only imperfect speech, use in expressing their thoughts, and it seems as though reference to this natural language might settle some of the disputes as to the appropriate gestures in discourse.

Gestures the primitive language

On the other hand, there are variations from these common roots according to the nationality and rationality of the person, just as there seem to be variations even in the instinctive expressions of emotion, so that we can not press too far the theory of a universal sign-language. Savages and children use many more gestures than adults of civilized races, and more pronounced inflections. It is related of some savage tribes that they can hardly understand each other in the dark.

Such language is much more closely confined to the concrete than are words. The gesture is essentially a reproduction of the object or action, and does not lend itself readily to the representation of class-ideas or trains of reasoning. Uninstructed deaf-mutes, it is claimed, have no ideas of the supernatural, and only the lowest abstract ideas. The entire system of gesture, while pleasing and universal, soon reaches its limit of development and must give way to a system that has greater mobility and power of adaptation.

It is supposed that there is some connection between the sign-language and the spoken word, but we have no exact knowledge of what it is. The brain centers for control of speech and of the right hand are close to each other, and presumably the exercise of either would stimulate the other through diffusion of the nervous excitement.

Connection of gesture with words.

Considering language merely as a means of communication, there would seem to be nothing marvelous in the fact that the word has come to be its chief form. It is simply a case of the survival of the fittest. Not only are the lips, tongue, etc., more mobile than other muscles, and so better adapted for expressing slight differences of sound and thus for indicating many objects with comparatively small effort; but their use leaves the hands free to do other work at the same time that talk is going on. It would seem inevitable therefore, that the word should become the especial means of communication as the demand for communication grew, though at first it was carried on merely by inarticulate cries and gestures.

Speech and the cry.

Cries and gestures seem to be to a large extent common to all men, and also to men and animals. The cry of rage is easily distinguished from that of pleasure; the cry of fear from that of attack. When we go beyond these, however, we approach speech. Buckman is authority for the statement that fowls have twelve or more different cries by which they warn and guide each other; cats, six; rooks, six, and monkeys two hundred or more, almost a language itself. We find also that many animals can learn to understand us, no gesture or peculiar inflection being used. Romanes

quotes the case of a chimpanzee who would follow her master's directions into minute details about sticking a straw into the meshes of her cage. Dogs also learn to follow directions, and even to read words and figures. It is related of one of Scott's dogs that the servants used to trick him by saying in his presence that the *master* would come home over the hill. The dog would at once go the route indicated, never by any chance taking the other path. There seems to be no intrinsic reason for doubting the possibility of such things. This does not, of course, mean that animals can reason.

In all such cases it is difficult to separate tone and inflection from the mere sound of the word. The former are the more primitive. Most animals obey the tone rather than the word. Idiots who can not learn to speak or understand words, can be taught some things by tone and gesture. This, perhaps, is one reason why music—mere tone—has such a universal hold.

Development of human speech.

From these rudimentary cries which man possesses in common with animals, some philologists believe that human speech has developed through refinement of the articulation. The reflex cry of emotion, the voluntary cry of warning or threat, and the imitation of some sounds, thinks LeFevre, furnish the elements of language. Of these elements animals possessed the first as well as man, but man, with a more developed brain, distinguished and used more words, through changes in intonation and in sounds. Other philologists lay more stress upon the influence of sex in developing language; while still others believe that man speaks

primarily because his lips and tongue are more mobile than those of animals.

Whichever factor may have been the leading one in the race-origin of language, we can see that in the baby's speech they all play some part.

It is indubitable that man now has a certain instinct to speak—*i.e.*, to communicate by sounds—though not to speak any given language. It seems that a French child brought up in an English family or vice versa, learns the adopted tongue as readily as the natives do. How far the development of language would go if children were left entirely alone is an interesting but unsettled point. The cases of shipwrecked children are unsatisfactory, because such children have had no companions and so no incentive to invent a language. Herodotus tells us that King Psammetichus of Egypt had two newborn children shut up so that they saw no men until two years old. At that age when brought into the presence of others, they said "beccos," which in Phrygian means bread. Psammetichus thereupon proclaimed the Phrygians the most ancient people. Long before a child imitates, however, he babbles, and the sounds that he thus instinctively makes are his unconscious preparation for later speech.

The first cries.

The child enters life with a cry, which has been the subject of much discussion. Some claim that it is a celestial cry—apparently a reminiscence of the angel's song. So noted a man as Kant asserts that it is a cry of wrath at being introduced to the hard conditions of this life. But we will satisfy ourselves with the notion that it is simply a cry of pain when the cold air rushes into the lungs and automatically expands them.

The first cries are instinctive and to the child's own mind are not expressive, although they usually indicate bodily conditions, such as hunger or pain or pleasure. Preyer notes the wail of hunger, the sharper loud cry of anger, the crow of delight, the monotonous cry of sleepiness, and the short, high-pitched yell of pain. These are instinctive at first and are not intended to tell others what his condition is.

The child cries at a bright light or a bitter taste, and later at a loud sound, because there are certain arrangements of nerve cells at birth that necessitate this response. During the first month of life, the sounds that the child makes are for the most part vowels. *Â*, *ŌŌ*, *Ă*, are the favorite ones, and there are variations of these and others which adults find it difficult to describe. These sounds are also frequently given on an inspiration and expiration, making two-syllabled combinations like *agoo*.

The first consonant put with them is an indistinct guttural or nasal, *g* or *ngâ*, as Miss Shinn gives it. These syllables are repeated by the baby again and again, making reduplications, for which he has a fondness for some time after real speech has begun. Savage races show the same fondness.

Wallace and Johnston have also attempted to show that the order of development in baby speech from vowels to semi-vowels, nasals and consonants, parallels the development of human speech.

The first consonants that appear are *m*, *p*, *d*, *l* and *k*. The first sound not a vowel, was heard by Preyer on the forty-third day; the first *ma*, on the sixty-fourth day. On these facts Buckman has based an ingenious theory as to the origin of language. The combination

ma-ma-ma is usually the first. Vierordt states that generally the vowel in the crow of pleasure is *ā;* of pain, *ä*. The latter very naturally, says Buckman, although purely reflex at the start, is used when the child is hungry or in pain, and becomes a way of calling for his mother, who relieves hunger and pain. Hence it becomes her name, "*mama*," and this root is found in Sanskrit, Greek, and Latin, as well as in our modern languages.

First consonants.

So again, *pa* or *da*, resulting in "papa" or "dada" is a natural cry when the child is not as violently agitated as by hunger, and becomes attached to the father. This root also is found in Sanskrit, Greek and Latin. *Kah*, on the other hand, is used to express strong disgust, as when the child tries to eject disgusting food. It is made by lifting the lips from the teeth, opening the mouth and almost coughing, the same instinctive expressions that animals employ. From it come the Greek κακός (bad), κάκκη (excrement), Latin, *caco*, and similar words.

The *la* sound, on the other hand, is given in contentment, or pleasure, and gives rise to the Greek λαλέω, *to chatter*, and the English *lullaby*.

From these instinctive utterances language first arose, thinks Buckman, constantly growing in fineness until the marvelous complexity that we now use was attained. Taine and Darwin bear out these remarks as to the first sounds. With Taine's daughter *ma* was first given; *krauu* to express disgust, and *pa* a little later.

Miss Shinn's records agree with these as to "mama." "Dada" was also one of the first words, and signified pointing out, seeing, exulting, admiring. "Nana"

was a wail of protest and refusal. Two other words, "Kraa" and "ng-gng" or "mgm" were used very early but were imitations of words given to her to express disgust, and disappearance.

The first exercise of the organs is not expressive of any meaning. The baby enjoys exercising his throat, tongue and lips and so keeps it up for hours at a time. It is an excellent training for the later speech, for, although he can as yet *imitate* no sounds, he *makes* all the sounds and gets flexibility and strength of the vocal organs and lungs. Deaf-mutes, who make few sounds as compared with normal children, are unusually subject to throat and lung diseases.

Order of sounds and syllables.

The exact order in which the various sounds appear must vary, although in the main the same, because the shape of the mouth and the other vocal organs differs and the child pronounces first the easiest vowels and consonants. It is also noticeable that Preyer says that during the first year of life the child pronounces all the vowels, even those which later on he has to learn over again. We have here a fact similar to what we have already noticed in imitation, where the child involuntarily does easily and well what he does slowly and imperfectly when the action is voluntary.

Among the sounds made at this early stage are all sorts of gutturals and "clicks," which adults find it difficult to speak and which correspond closely to Arabic and Hebrew gutturals and savage "clicks."

The order for the appearance of the letters, as given by Tracy, is as follows, beginning with the most difficult: *r*, *l*, *th*, *v*, *sh*, *y*, *g*, *ch*, *s*, *e*, *f*, *t*, *n*, *q*, *d*, *k*, *o*, *w*, *a*, *h*, *m*, *p*, *b*.

Sully puts all mistakes in pronunciation under the following heads:

1. *Simplifications.*

(1) A child naturally drops letters and syllables that are hard for him, especially if they are at the end of the word, and the inflection and rhythm are not altered thereby. At first he seems to understand only the vowel sounds in what is said to him, and in imitating a sound will get only the vowel and inflection, with a vague surrounding of indistinct consonants. Preyer's boy would respond in the same way to "Wie gross?" "gross," and "o'ss." Again, in trying to say "Putting my arms over my head," little Ruth would get, "ŭ ĭ ĭ ä ōwў ĭ ĕad," with hardly a distinct consonant in it, but a ludicrously faithful reproduction of my own tones.

Mispronunciation.

In this dropping of syllables *dance* becomes "da"; *candle*, "ka"; *handkerchief*, "hanky," "hankish," or "hamfish," and so on.

(2). The accented syllable naturally is always the one kept, whether it is at the beginning, middle or end of the word, for we speak it with more stress and voice, and it must attract the baby's notice more than the others.

2. *Change of letters.*

(1) Vowels are not omitted but are often changed.

(2) Consonants are not always dropped, but others may be substituted for them when they are difficult. In such cases the preceding or succeeding sound determines what shall be put in, giving a duplication. Thus "cawkee," *coffee;* "kork," *fork;* "hawhy," *horsie;* "laly," *lady*. In other cases *p* and *s* are dropped and others substituted: "feepy," *sleepy*. Where

l and *r* are replaced, almost any substitute may be used, but *w* is a favorite.

(3) The consonants may be interchanged: "tsar," *star;* "psoon," *spoon;* "hwgohur," *sugar;* "aks," *ask;* "lots it," *lost it.*

With all these natural difficulties in speaking correctly, it seems a pity to add further mispronunciations by his elders, in the form of baby-talk. Baby-talk is one form of endearing terms, but surely the English language has a vocabulary of such words that is far better than the usual run of baby words. We hinder the child's speech by limiting ourselves to him. We should rather encourage him to use our words, especially as the vocal organs grow less flexible as they become more used to certain combinations of sounds, and so an incorrect pronunciation may become habitual. An older form of baby-talk is found in many schoolbooks in the names given to flowers, animals, geometrical figures and so on. As a matter of fact children learn the correct names as easily as they do the silly, sentimental ones, and do not need to unlearn them later and get the proper ones.

Baby-talk.

So far we have discussed only the making of articulate sounds. We have not yet reached language. For language we must have not only a perfect vocal and auditory apparatus, but ideas, and desire to express them. During the first six months the child seems to lack these, although Darwin noticed in his boy different cries for hunger and pain at the age of eleven weeks and an incipient laugh in the sixteenth week. But it may be questioned whether these were not entirely involuntary and

Rise of true speech.

reflex. In the second six months, however, persistent imitation of sound and gesture arises. The child voluntarily uses different cries and gestures for different things, although his vocabulary of spoken words is very small, or may indeed be nil, as in the case of Taine's child.

Feldman on comparing children found that the first word varied as follows:

Month:	14	15	16	17	18	19
No. of children:	1	8	19	3	1	1

These children first walked alone:

Month:	8-9	10	11-12
No. of children:	3	24	6

From this it appears that children walk before they talk, and we may add that they understand before they walk.

When the child is learning to walk he acquires no more speech and may even go backward, but after that the learning and understanding of words is very rapid. A child understands many words before he speaks, even as early as eight months. Strümpell's daughter enjoyed little stories told her in her thirteenth month, though her own speech was very imperfect. Another child of eight months knew by name all the persons in the house, the parts of her body, and most of the objects in the room, and understood simple sentences.

The first vocabulary.

It should be said here that children may differ within wide limits as to the time when they begin to speak, and still not be abnormal. Many authorities state that if a child does not speak by the age of five, he may be considered abnormal, but not until then. Perez, indeed, says that "The more intelligent a child is, the

less he uses words, and the more necessary it is to him that words should signify something to him, if he is to learn them; and this is why he only learns words in proportion as he gains ideas about objects." By the end of the third six months he may use not only many single words, but even short sentences, and words of his own invention. This latter fact is interesting theoretically from its connection with the possible origin of language.

The character of the first vocabulary is shown in the following comparative table, which is given in per cents:

	Noun.	Pron.	Verb.	Adj.	Adv.	Prep.	Conj.	Interj.	Total No. of Words.
Dewey.									
1 girl, 18 mos.	53	6	28	1	6	0	1	6	144
1 boy, 19 "	60	0	21	11	3	0	0	5	115
Tracy.									
12 children, 19 to 30 mos.	60	2	20	9	5	2	.3	1.7	5400
Salisbury.									
1 girl, 33 mos.	54.5	3.7	23	9.6	5	3	.006	.006	642
1 " 5½ yrs.	57	1	20*	17*	2	1	.003	.0009	1528
Wolff.									
Boy's Dictionary*.....	42	0	30	8	10	4			215
Kirkpatrick.									
Per cents of words in English language ..	60		11	22	5.5				

These lists, as Dewey remarks, classify the words according to their meaning for adults, an artificial method for two reasons. At first one word stands for a sentence in childish speech. "Water"—*I want*

* This dictionary was made by a boy before his seventh year. It does not, of course, give his entire vocabulary, but only words that for any reason he wished to define.

water. "All gone"—*The flower has disappeared*, etc. Furthermore, the child, like the savage, uses one word for many parts of speech. "The hurt blooded." "It ups its false feet." "Can I be sorried?" etc. A carefully-made vocabulary would classify each word according to the child's use of it, and so such classifications as these given here are but rough and ready tests. Even so, however, they are suggestive of characteristic differences between the child and the man.

The idea of *action* is very prominent in all the first language. Even with this artificial classification, the percentage of verbs is twice as large in childish as in adult speech, and less than 1 per cent of the nouns are abstract. Here again we find the parallel between the child and the race. The more primitive a language, the larger the proportion of verbs, and it is very probable that the first sentences consisted of but one word. An interesting bit of evidence to show how recently the different parts of speech have assumed clearness in man's mind, is the fact that the ancient Greeks in writing ran all the words of a sentence together.

Color vocabulary.

Children vary greatly in the age at which they learn to name colors, as well as in the ability to distinguish the colors. Preyer's child at twenty months knew no color names; twenty-five others knew red and green; thirty-four, yellow, brown, red, violet and black. The colors are named correctly in the following order: white, black, red, blue, yellow, green, pink, orange, violet. The girls show greater ability in this direction, a girl of eight comparing with a boy of sixteen.

The number of different words used by different children has been very differently estimated. Some of the differences are due to the fact that some writers put different forms of one word *e.g.*, *go, going* and *gone*, as one word, while others consider them as different words. In the following list, taken from Tracy, and in the preceding list, inflections of a word are not counted as separate words.

Size of vocabulary.

Sex	Boys										Girls									
Age in mos....	9	12	12	15	12	19	24	24	28	30	17	21	22	22	23	24	24	25	27	28
No. Words.....	9	10	8	0	4	144	139	285	677	327	35	177	28	69	136	36	263	250	171	451

Preyer found that nine children (eight girls and one boy) at two years had vocabularies ranging from 173 to 1121 words. Thus there seems to be a wide range in the number of words possible at any given age, and we do not yet know what connection there is between them and the child's general development and intelligence.

It happens also that children living under ordinary conditions sometimes invent words and even languages. The languages we shall mention later. The words seem, in some cases, not to be the result of imitation, but strictly original. Among such cases are "memby," *food;* "afta," *drinking;* "gollah," *rolling things;* "tonies," *children;* "diddle-iddle," *hole;* "wusky," *sea.*

Invention of words.

One child described by Mr. Hale invented names in which the vowels denoted the size of the object as they were higher or lower; *e.g.*, "lakail," *an ordinary chair;* "lukull," *great arm-chair;* and "likill," *little doll's chair;* "mem," *watch* or *plate;* "mum," *large dish;*

"mim," *moon;* and "mim-mim," *stars.* Deaf-mutes invent a few words usually, and some invent many. Words for food and drink are the most common.

Besides the invention of words, children usually form some words through the imitation of sounds or onomatopœia, as Miss Shinn's niece imitated the mewing of a cat and later used the sound for the cat's name. In this respect as well as in the invention of words, the natural tendency is repressed by the fact that children have the adult language before them to imitate and so are saved the trouble of inventing a new one.

Nevertheless, the tendencies which do crop out are of great interest to the philologist, because the words which children form either through invention or imitation show curious resemblances to primitive tongues and offer suggestions as to the origin and development of language. For instance, Mr. Hale and various other authorities who have studied the words and languages invented by children, believe that in this tendency to invent is seen the cause of the origin of diverse languages. "Each linguistic stock must have originated in a single household. There was an Aryan family-pair, a Semitic family-pair, an Algonkin family-pair. And further, it is clear that the members of each family-pair began to speak together in childhood."

The first sentence.

The age at which the first sentence is spoken will vary as much as all other stages of language development. To quote Preyer again, his son spoke the first sentence near the end of the twenty-third month. The memorable utterance was "Heim mune," which, being translated is, "Home, milk." Strümpell's daughter, however, spoke

her first word in the tenth month and used sentences as early as the seventeenth month.

The first sentences after the sentence-words already mentioned, commonly consist of a noun and adverb or adjective, or two nouns with a verb understood. "Big bird," "Papa, cracker, milk," etc. The verb makes its appearance, says Sully, as an imperative first. The order of the words varies, sometimes subject and sometimes predicate being put first. Apparently imitation has little effect when an English child will utter a sentence like this: "Out pull baby spectacles." I suppose that the order depends upon the idea which is most prominent in the child's mind, that being put first, as with adults sometimes, for the sake of emphasis. Children as a rule seem to have trouble in putting "not" in the right place; and they also bring out their meaning by making two opposing statements—"This not a nasty wow wow; this a nice wow wow." This uncertainty of order is also paralleled in primitive languages.

First use of inflections.

We all know the wonderful things a child does, when he tries to use inflections, in his attempt to make the language consistent with itself. Of course irregular verbs are made regular, plurals are all formed alike and so on, but he caps the climax in his use of the verb *be*. As Sully says, it is asking too much of a child to expect him to say "Yes, I *am*," when asked, "*Are* you good now?" and we can sympathize with the little girl who, after much drill from her mother, when asked if she was going out said, "I'm are." If a child is asked, "Will you be good?" why should he not say, "I be good"; or, if that event occurred yesterday, "I bēd good"? "Am't

I?" is surely as logical as "Isn't he?" We find also an impromptu making of verbs that is delightful. "Bettern't you do it?" says the little fellow.

"I" and "you" are stumbling blocks also. At first the child speaks of himself by name, and is likely to think "I" and "you" names like any other. So he will say, "What am I going to do?" for "What are you going to do?" The constant change from one to the other, according to which person is speaking, is most puzzling, and yet Tracy says the child has learned the meaning by twenty-four months. Others assign dates from sixteen to thirty months, a wide variation. This is, of course, a gradual process. The child will use the terms correctly, and then drop them for the time, to resume them later. The free use of them is commonly taken to signify more sense of the child's own personality than before. The development of speech is effectively summarized in the chart found on the following page.

This first learning of the mother tongue is fairly complete by the fifth year, but between eight and fifteen years there is usually a revival of interest.

Secret languages.

This is seen in the secret languages of children, which are found wherever children are together. There are many kinds of secret language, varying from the easy "hog Latin," which only adds "gry" to every word, to a very complex and inflected language. Frequently such a language lasts for fifty or sixty years, and is passed down from one generation of children to the next. In other cases the language is invented in whole or in parts, and even a dictionary may be made, to which new words are added from time to time.

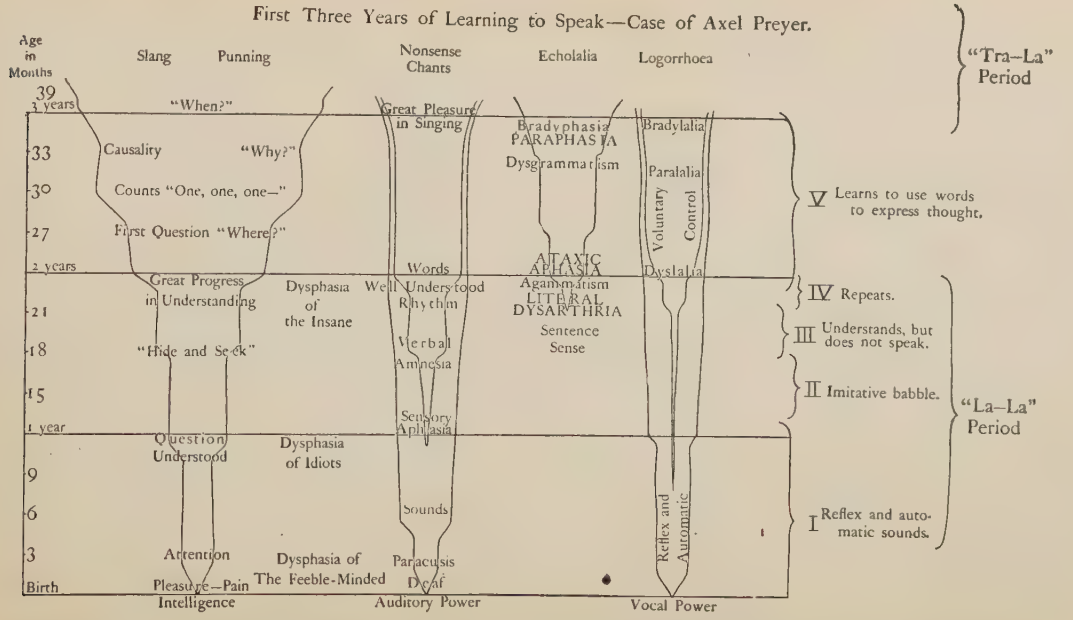

DIAGRAM 13. LUKEN'S SUMMARY OF PREYER'S OBSERVATIONS ON THE ACQUISITION OF SPEECH AND ITS PARALLELISM WITH THE LOSS OF SPEECH THROUGH DISEASE. (Used by permission of the *Pedagogical Seminary*.)

The length of time such a language is used varies greatly. In some cases the interest lasts only a few weeks; in others ten or twelve years. Two children who invented their tongue used it so constantly that their parents made every effort to dissuade them from it, but in vain. After two years, however, they gradually began to use English. In another case a man records that he has spoken his secret language to himself for fifty years. That is, he thinks in it, and when he speaks or writes translates into English. The motive for using the language is, as a rule, the desire for secrecy. The older children begin to employ it to keep secrets from those not in their clique; another language is used in another clique, and so on. The language is used in writing notes in school, and on all occasions where mystery and secrecy are desirable.

Speech and reading.

The hearing and speaking of words comes before reading; and the brain centers employed in hearing and speaking are the first developed and the most firmly established. Lukens concludes from this that a child should at first be allowed to read out loud, and later to himself. Children learning to read whisper the word to themselves.

Language and thought.

After the child by his instinctive babblings and persistent imitation has learned to speak words, he learns to use them with a significance from constantly hearing one word used in connection with a given object. In so far as the same word is used for different objects or situations, he is left helplessly struggling for the common meaning hidden beneath all this diversity; and again when

different words are used with the same meaning, as in the various forms of *be*, he is led astray into seeking differences where none exist.

Hence comes the value of language as an aid in the development of concepts, and as a revealer to us of their growth in the child's mind. At first he uses words in altogether too wide a sense. "Mamma," "bath," "wow-wow," are applied not only to the particular objects he knows, but to all that in any degree resemble them. The child does not see differences distinctly enough to mark off individuals unless there is some striking characteristic to aid him. He rather associates the word with the whole situation in which it is used, and oftentimes with all the details of it. Thus, Romanes gives the case of a child who saw a duck on the water, and called it "quack." After that he called all birds and insects "quack" and also all liquids. Still later, he saw an eagle on a piece of money and called it "quack" again. Lindner's daughter when asking for an apple, was taught to say "apple," and thereafter used the word as meaning *eat*. Another child used the word "ta-ta" to say good-by; then when anything was taken away; then for the blowing out of a light. Still another used "hat" for anything put on his head, including a brush and comb. Dipping bread in gravy is called a "bath." The palate is the "téeth roof"; the road is the "go"; the star is the "eye"; all metals are "keys," etc.

In all such cases we notice that the child is trying to classify, and must use what he already has in the way of words to aid him. So also with relations—a much more difficult thing, and one in which a child is likely to get confused. A child will have a vague

idea of quantity, but can not at first express or understand too much and too little, too big and too small, etc. He may get them in one situation, but when the same object that is too big for one thing is too small for another, it is beyond him. Here is the root of his trouble with "I" and "you." It is not surprising that little George thought "the Doctor came and shook his (Willie's) head and gave him nasty physic, too." "Buy" and "sell," "lend" and "borrow," "teach" and "learn," are thus all pitfalls for him, and at first are confused. Here again we can trace the race parallel. Many people use "learn" for "teach" and we apply "pleasant," "sore," etc., both to our feelings and the object that causes them. Our abstract words also bear unmistakable marks of their concrete origin. "Spirit" is "breath"; "wrong" is "awry," "twisted," or "bitter"; "right" is "straight," and so on through the list.

Expressing relation.

In his hasty generalizing the child makes many mistakes in his conclusions, and so a process of limiting or correcting old concepts and of more carefully forming new ones begins. A good example of such limitation is given by Darwin. His son called *food* "mum," *sugar* was "shu mum," and *licorice*, "black shu mum." Such words as "teeth roof" for palate, "eye curtain" for eyelid, "tell wind" for weather-vane, show both generalization and limitation. On the other hand, of course, if the child's experience of a word is too narrow, he will make ludicrous mistakes in over-limitation. Thus one boy said that the good Samaritan poured paraffin into the wounds of the sick man. Oil meant only paraffin to him. The child who entreated

Process of limitation.

his mother to "buy him a brother while they were cheap at the show because children were half-price," labored under a similar difficulty. Perhaps also the strict insistence of little children on exactly the same words in retelling a story shows their feeling of a strangeness with words. When Mr. Two-and-a-half-years is asked, "Shall I read to you out of this book?" he answers, "No, but something inside of it," because that is what he wants.

Love of nonsense songs, and of Mother Goose, and the making up of nonsense rhymes mark this period also, which may begin as early as three and a half years. A little child will often sit by himself singing over lists of word: *mam*, *pam*, *tam*, *sam*, *jam*, etc., taking an immense delight in it. Sometimes he will rhyme his answers to your questions, or make all his conversation rhythmical.

With the process of narrowing or limitation well marked, the child's way is comparatively clear before him. It is thenceforth the usual process of the formation of correct concepts as traced by Baldwin. An object is first given which is both percept and concept. When other objects are presented like this in some respects, the same word is used for all, until the child fails to get what he wants by this common word, and so is forced to make species and varieties to go under the larger class. In the expression of the ideas, he uses the words that he knows, making new and quaint combinations, but little by little imitation teaches him the conventional signs, and he drops the original forms.

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CHAPTER XVII

Rhythm and Music

1. Ask adults and children to name the first ten nursery rhymes that come into their heads. Note the rhythms. **Observations.**

2. Compare the rhythm and time of tunes in your head with your heart beat and breathing.

3. Notice what songs your children sing most spontaneously.

4. Ask what song they like best and notice whether the liking is due to

(1) Season, *e. g.*, Christmas songs.

(2) Imitation.

(3) Permanent interest.

5. Try to get song composition from some child or small group of children uninstructed in music.

Before taking up rhythm as related to music, let us first notice how general a thing it is and how it underlies all mental activity. **Universality of rhythm.**

Natural phenomena almost universally take a rhythmical form. We have first the great swing of the worlds in their course about the center of the universe, in a rhythm never yet completed. Then we have the course of each world about its sun, of each satellite about its world, and the rotation of the various worlds upon their axes, making the rhythms of the year, month and day. In our sun there seem to be rhythms recurring about every eleven years, causing

our sun spots, and, it is seriously conjectured, affecting the harvests of our earth and resulting in disturbed atmospheric and organic conditions which lead to our periodical money panics and outbreaks of crime and suicide. However this may be, it is unquestionable that the yearly, monthly, and daily rhythms seriously modify both the vegetable and animal creation. Some plants have a daily rhythm of growth and rest; most of them have an annual one; all seek the sun. Even the moon influences the growth of some plants.

In the animal world there are corresponding rhythms. Growth is faster in summer than in winter, and we can each observe annual rhythms in our mental moods according to the seasons. Certain states of mind and even trains of thought are likely to recur with each season. "Spring poetry," so much laughed at, or something corresponding to it, is, I suspect, written by many more people than are willing to acknowledge it.

The monthly rhythms seem to be especially connected with the reproductive and nervous systems. The period of gestation in various species of animals is usually a month, or a number of days which is seven or some multiple of seven. Disturbances of the nervous system, recurrent insanities, abnormal cravings for liquors and other stimulants, are also likely to have a monthly rhythm.

Weekly rhythms are less clearly marked, but as we saw in the chapter on growth, there is a weekly rhythm of growth which was probably the cause of the change in our manner of living on Sunday. It has led to certain rhythms of thought and feeling. We sleep later, we are hungry at different times, and we think differently

The daily rhythm of sleep and waking is a universal one and it seems to be accompanied by one of growth. This is a genuine organic rhythm, caused probably by the rhythm of day and night, and can not be easily changed so that we shall sleep in the day and work at night.

There are many other bodily rhythms, of which we will mention only a few: the pulse and heart beat, respiration, walking, and speech. Every cell seems to have its own rhythm of alternate activity and rest; the nervous system sends out rhythmical stimuli, differing in different parts. Thus the brain can send out only about thirteen per second, and the cord about thirty-four. Fatigue is also a rhythmical thing, a period of exhaustion alternating with one of recovery.

Special bodily rhythms.

Not only is every bodily process a rhythmical one, but every mental one as well. Any one who watches himself will observe alternations of waxing and waning in the distinctness of his ideas and mental images. If he tries to hold one idea unchanged, he will be able to see clearly the rhythm of his attention. This is perhaps best shown in retinal rivalry.

As rhythm is such a fundamental thing in nature, it is not surprising that when given to us objectively it finds in us a response. Almost any effect can be produced in susceptible people by appropriate rhythms, from putting them to sleep to rousing them to a state of frenzy closely akin to madness. Just what rhythm will have each effect, is not fully decided upon. Baldwin found that when he suddenly discovered himself singing a tune, the rhythm and time might be determined by any one of a

Most commonly liked rhythms.

number of factors—his step, as he walked, his heart beat, or his breathing. It seems reasonable that a rhythm which is in accord with and slower than the rhythmic activities of the body would be soothing; if faster, exciting, and if of a different kind, unpleasant.

Mr. Bolton found also that in listening to a series of uniform clicks the most common grouping within the widest limits was by 2's, when the rate of the clicks was moderate; when fast, by the heart beats. When the stimuli were .795 seconds apart, the mind grouped by 2's; .460, by 3's; .407, by 4's. Usually he found that the breathing accommodated itself to the rhythm instead of vice versa.

Whether a grouping is by 2, 4, 8, 16, etc., or 3, 6, 12, etc., seems to depend upon the rapidity of the stimuli. But why 2 or 3 is chosen is unexplained, unless it varies with the pulse. Grouping by 5's is always very difficult.

These observations have been confirmed in another way by Triplett and Sanford. They asked large numbers of persons to send in lists of the first ten nursery rhymes that came into their heads. Of these, they selected the one hundred most often mentioned and examined their rhythm. They found that,

Rhymes.

1. The most frequent stanza is of four lines, with four stresses, the lines rhyming in couplets. A common example is:

> "Georgie porgie, pumpkin pie,
> Kissed the girls and made them cry," etc.

2. The second in frequency consists of the first and third lines with four stresses, and the second and

fourth with three, with or without an internal rhyme.

"Mistress Mary, quite contrary,
How does your garden grow," etc.

This rhyme is much less common than the first, in child poetry.

3. Three three-stress lines and one four-stress, with the last line a repetition of the first.

"Hickory, dickory, dock,
The mouse ran up the clock."

These three rhythms include four-fifths of the one hundred nursery rhymes, and one-half of the hymns in a hymnal (the particular hymnal not given). The remainder of the rhythms differ widely.

Triplett and Sanford find that in the recitation of these rhythms, there is a general uniformity in the intervals between stresses except at the end of lines, where they are longer; and there is a general quickening of time toward the end of the piece.

The characteristic movement of the common rhythms depends partly on the distribution of the pauses and partly on this quickening.

Tests on school children show that they force the words into a pattern, but also vary the patterns somewhat:

"Sing a song of six pence,"

or,

"Sing a song of six pence."

Turning now to music, we find all sorts of theories as to its origin. Darwin advanced the theory that music originated as a courtship art both in birds and

in man, but actual observations of the animals nearest to man and of savages do not seem to confirm this view. Still we may suppose that at first language and music were not distinct, the cry being the common root from which the two have developed in different ways. Music proper, or melody, seems to arise first in connection with the dance, and the dance in its original form was the reproduction of the activities of existence or, it may be, a propitiation of the gods. Uniformly the dance takes a rhythmic character. At first it is performed in silence, but as the dancers get aroused they give vent to their feelings in more violent movements, and in cries, the cries naturally assuming a rhythmic character consonant with the movements. Thus the rude song is born, a song without words, and in almost a monotone.

Origin of music.

This theory fits in very well with what we can see of children's natural musical tastes. The development of melody and harmony is much later than the appreciation of rhythmical cries. Gurney says that the former does not appear until four or five years. We should expect kindergarten children then not to care so much about singing the melody as about keeping time.

The child, as we have seen, is born deaf, and remains so for a time varying from a few hours to several days. When hearing is established, sound seems to have marked effects, for small children are more easily terrified by loud sounds than by almost anything else. Preyer and Perez note that in the seventh and eighth weeks a child listened to the singing of lullabies with much pleasure and showed an appreciation of piano playing by his vigorous movements and laughter at the loud notes.

Child's love of noises.

Children of six months show great enjoyment of music; at nine months some will reproduce musical tones. Perez also records the case of a child who sang himself to sleep, when only nine months old. By the age of a year some will reproduce tones quite perfectly. Sigismund says that musical tones are imitated before spoken ones. Noises of all kinds appeal to children, even unpleasant ones, especially if there is any rhythmic arrangement, and they delight in reproducing them as far as possible.

Children vary greatly among themselves and at different ages in their ability to distinguish tones. We find the child who sings the scale in one tone from *c* to *c;* and another one who can sing the chromatic scale with ease. Whether any given child is tone-deaf or simply lacks training, can be told only by experiment, and, even if not up to the average, many a child's ability can be improved by practice. **Sensitiveness to tones.**

In children from six to nineteen years of age, the least sensitive age is six, when the least perceptible difference of two tones is about one-quarter of a tone. Thence to nine years there is twice as much gain in sensitiveness as from nine to nineteen years; and afterward a more gradual gain, with a break and retrogression at ten and at fifteen years.

The actual tastes of children seem to have been little observed. Miss Gates' and Mr. Marsh's articles are the only ones on this subject. Miss Gates had answers from two thousand children, one hundred boys and one hundred girls for each year from six to sixteen. **Songs liked by children.**

1. She found that 22 per cent of the girls and 12 per cent of the boys of seven years like best lullabies and

baby songs, while 14 per cent of the girls and 7 per cent of the boys like home songs the best. "Home Sweet Home" is the favorite. Of the seven-year-old boys and girls 43 per cent like school songs the best; nature songs are the favorites. Twice as many boys as girls like negro songs. "Swanee River" and "Massa's in the Cold, Cold Ground" are the favorites.

2. Religious songs are best liked by two hundred and ninety-six girls and six hundred and ninety-six boys at six years; 23 per cent of the girls and 6 per cent of the boys at thirteen years; 27 per cent of the girls and 6 per cent of the boys at sixteen years, making an average of 18 per cent. "Nearer my God" is the favorite.

3. National songs are best liked by 13 per cent of the girls and 18 per cent of the boys at seven years; 29 per cent of the girls at twelve years; 40 per cent of the boys at eight years. "America" and the "Star Spangled Banner" divide the honors here. Marsh gives this table of "The one song he liked best in all the world." The returns are from six thousand three hundred and thirty-eight children. The table is given in per cents.

Boys

Grade	School	Sunday School	Patriotic	Street	Home
1.....	43	10	26	9	9
2.....	39	11	29	9	10
3.....	29	8	40	14	10
4.....	12	10	42	21	12
5.....	7	11	30	18	12
6.....	6	4	15	17	21
7.....	11	10	48	20	10
8.....	9	68	60	9	14
9.....	3	1	58	9	26
10.....	3	0	65	5	25
11.....	0	16	25	33	25

GIRLS

GRADE	SCHOOL	SUNDAY SCHOOL	PATRIOTIC	STREET	HOME
1.....	43	15	13	6	11
2.....	43	10	15	6	11
3.....	39	11	25	8	15
5.....	12	15	32	15	24
6.....	9	9	37	17	26
7.....	13	19	20	21	17
8.....	16	22	32	2	26
9.....	3	1	21	7	35
10.....	1	10	47	4	38
11.....	0	29	27	0	44

BOYS AND GIRLS

GRADE	SCHOOL	SUNDAY SCHOOL	PATRIOTIC	STREET	HOME
1.....	45	13	23	8	10
2.....	42	16	23	8	11
3.....	39	9	31	11	12
4.....	19	14	35	16	13
5.....	9	13	41	17	18
6.....	7	7	43	17	24
7.....	12	15	37	21	14
8.....	13	16	44	5	21
9.....	3	2	59	9	27
10.....	2	7	53	5	33
11.....	0	26	26	7	41

Many reasons are given why the favorite piece is liked. As children grow older, more say it is because they like the music or words, and fewer because they have associations with it, or it is nice, pretty or sweet. The associations are of all sorts—of home, Christmas or some holiday, with historical events, or simply with smell or some other sense. A very small per cent of the favorites are movement songs, and as a rule major keys are preferred to minor ones.

It is interesting to note the changes in taste with advancing years. The school songs show these variations: boys and girls, 43 per cent in 1st grade to 9 per cent and 16 per cent in 8th grade, and none in 11th grade.

Changes in taste.

S. S. songs, boys, 10% in 1st grade, to 16% in 11th grade.
" " girls, 15% " " " 29% " "

Patriotic songs show remarkable fluctuations in the liking of the boys and girls, as the table indicates. Street songs increase in number to 4th grade; decrease slightly to the 7th, and rapidly to the 11th. They then rise suddenly to 33 per cent in 11th grade.

With the girls the curve is of the same nature though of a smaller per cent, except that at the 11th grade it decreases to 0 instead of rising.

The per cent of home songs increases to 6th grade, falls in 7th grade and then increases gradually.

The subject of children's musical composition is one that is not considered nearly as often as children's drawings, and yet there would seem to be no reason in the nature of the case why children should not create songs as well as landscapes.

Songs by children.

The first musical productions are not distinct from the beginning of speech. The child cries, howls, gurgles and babbles, not only when he is hurt or pleased, but just to see what sounds he can make.

Sometimes one set of sounds takes possession of him for a time and he will seem unable to keep from repeating it. Perez gives a case of a little girl who repeated "tira-tira" for two weeks. Children a little older delight in nonsense rhymes, in chain rhymes, in alliteration, etc., and will make up all sorts of rhymes

and tunes for them. Children of all ages experiment in producing noises not only with the vocal organs but also with any instruments they can get hold of. At first their song is monotonous, hardly to be distinguished from the speaking voice, but by the age of four or five years the two are well marked.

There seems to be a genuine impulse to musical expression in many children which, although modified by imitation, is still a true originality.

So far as the writer's knowledge goes, the only systematic work that has been done by school children in song composition is in the Elementary School of the University of Chicago. This is so suggestive that the teacher's account and some of the songs are given.

SONG COMPOSITION*

That music is an important factor in the growth of the child's esthetic nature is a fact generally conceded. Is it, however, practically made use of? Is the nursery, which we now realize must be artistic as well as wholesome, furnished with the means of producing beautiful sounds—failing the human voice, with the *vox humana*, or other soft-toned instrument?

As early as he is shown beauty in color and form the child should have beauty in tone and melody given him. There are no unmusical children. Interest in musical expression is one of the natural resources of the child, and unconsciously he will awaken to a melodic conception through repetitions, in pure and gentle tone, of melodies suited to his understanding. This process can not be begun too early. Having understood, he possesses a mental picture which he seeks to express by humming or singing. This

*By May Root Kern.

expression of an esthetic impulse is as natural to the child as his expression in color. Needing no utensil, it is simpler, and would be more readily used were his early environment as full of tone as of color. The more he hears of this music, the more he assimilates and the more he has to express. And not alone through imitation. If he be given a poetic phrase which touches his imagination, he can give his own melodic conception of it; and the awakening of this creative faculty brings a joy which stimulates the growth of his whole esthetic nature.

There is nothing more precious to a child than his own creation, and to preserve his melodic thought he will wish to acquire a knowledge of the symbols necessary to express it. The basis for a study of the science of music is formed by his desire to express various forms of melodic thought. He realizes the necessity for the controlled use of his fingers to express them beautifully on the keyboard, and grasps the necessity of manual drill. His whole study of the technique of piano-playing is illumined, and the proper relationship of idea and its servant expression has been preserved. Problems introduced by the growing intricacy of his conceptions — key relationships, transposition, harmony—are mastered with a natural motive, and, led by his own impulse, he is ready with open mind and heart to receive, according to his capacity, the riches which master-minds are still pouring nto the music treasuries of the world.

In the school, a problem to be coped with arises from the diversity of musical attainment in the groups. Children from non-musical environment are to be handled with others who are developed musically. To

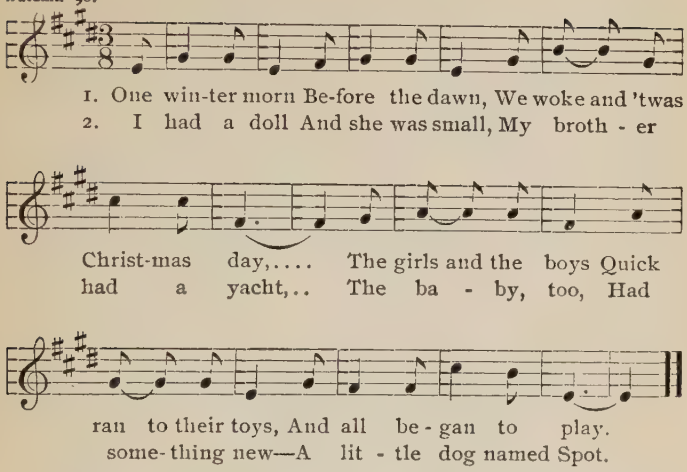
lessen the chasm, much thought is given to creating a musical atmosphere. The formal side of the work is made as melodious as possible, and all technical exercises are clothed in harmony. The children have weekly opportunity of hearing a short program of music by the best composers, performed by friends of the school, by teachers, or by pupils prepared through outside work. The older children have heard short and simple talks on the lives and work of the great masters, illustrated by piano and vocal selections. A large part of each period of work is spent in song-singing. The school has been divided into two choruses, one ranging from six to eight and a half years of age, the other from nine to thirteen. These choruses have sung melodies learned by rote in their group work, the older chorus having in its repertoire songs by Franz Schumann, Wagner, Reinecke, Humperdinck, and some of the best English composers. In connection with their work in Latin, they have learned a Latin song of nine stanzas and a shorter Christmas hymn; in connection with French, several *chansons populaires* and two old French rounds. The latter, being very simple in melody, have furnished a valuable exercise in concentration. There being in this chorus a considerable proportion of children unable to sing a connected melody correctly, perfection in detail is impossible. The special aims, other than familiarity with good songs and the memorizing of texts, have been bodily poise, deep breathing, careful enunciation, and a pure quality of tone. A picked chorus of twenty-five voices is now being arranged which will be trained to do some model singing for the benefit of the school.

Owing to the wide differences in musical development, it was difficult to find a common ground for the work of each group as a whole. The technical work founded on short, original phrases sometimes failed to arouse interest in those children who but imperfectly grasped melodic idea. The proposition, however, to select a topic and write a complete composite song, which should express the genius of the group, brought a unity of impulse at once. It was supposed that the unmusical children would devote themselves to the text and leave the musical setting to the rest. But not so; the general enthusiasm awoke them to an overflow of musical ideas, and a firm belief in their own phrase as given. Whatever of novelty the songs possess is owing to the odd intervals offered by these non-musical children. It was necessary to harmonize them attractively to gain their acceptance by the musical members of the group, who, left to themselves, would have given only the most obvious phrases and thus produced more commonplace results.

After several successful songs had been composed, a group of children between seven and eight years, below the average in musical development, but having a strong feeling for rhythm, wrote the following, which is saved from monotony by the final phrase given by a boy almost tone-deaf. He offered the phrase, which was repeated on the piano as nearly as possible as he had given it. He objected, however, saying what was played was not what he intended to give. After repeated attempts, the teacher succeeded in discovering what he had persistently kept in his mind, but could not express.

CHRISTMAS MORNING

Autumn '98.


1. One win-ter morn Be-fore the dawn, We woke and 'twas
2. I had a doll And she was small, My broth - er
Christ-mas day,.... The girls and the boys Quick
had a yacht,.. The ba - by, too, Had
ran to their toys, And all be - gan to play.
some-thing new—A lit - tle dog named Spot.

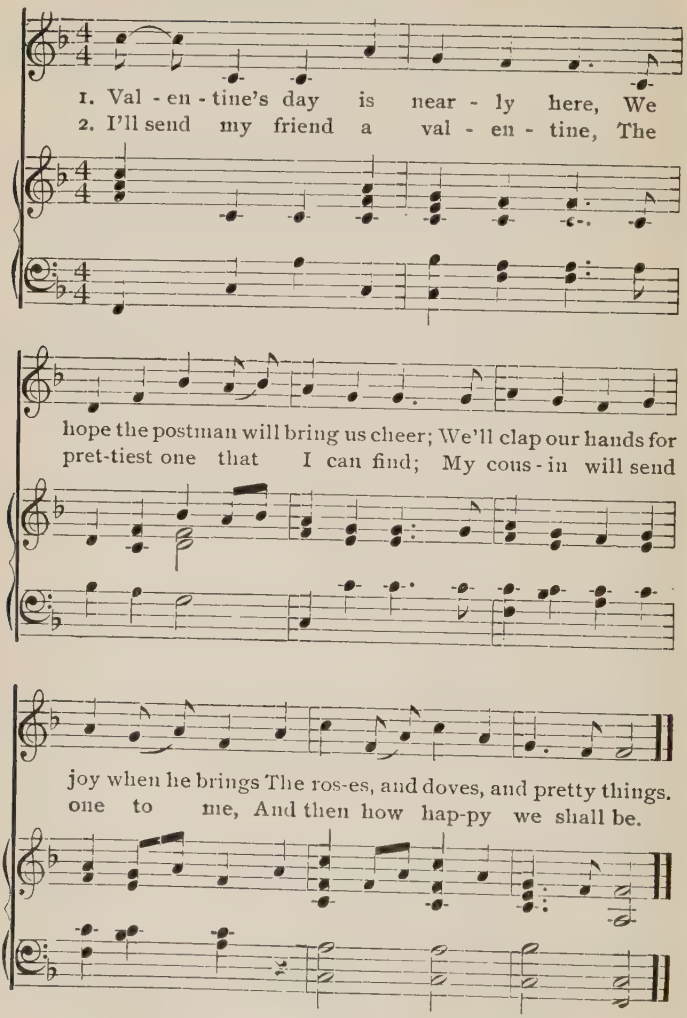
It was at first thought that the six-year-old children were too young to carry a thought through the several periods (occurring but twice a week) required to finish a song. At their request, however, they were allowed to undertake the task, and evinced as much continuity of thought and purpose as the older children.

In writing the texts for songs, the youngest children, as soon as the idea of rhythm and rhyme is gained, insist upon making consecutive lines rhyme as in the "Valentine Song." They free themselves gradually from rhyme limitations, as:

"The children will go
Out in the snow
And have some jolly fun.
They'll make big balls
While the snow falls,
Until a snowman's done.'

VALENTINE SONG

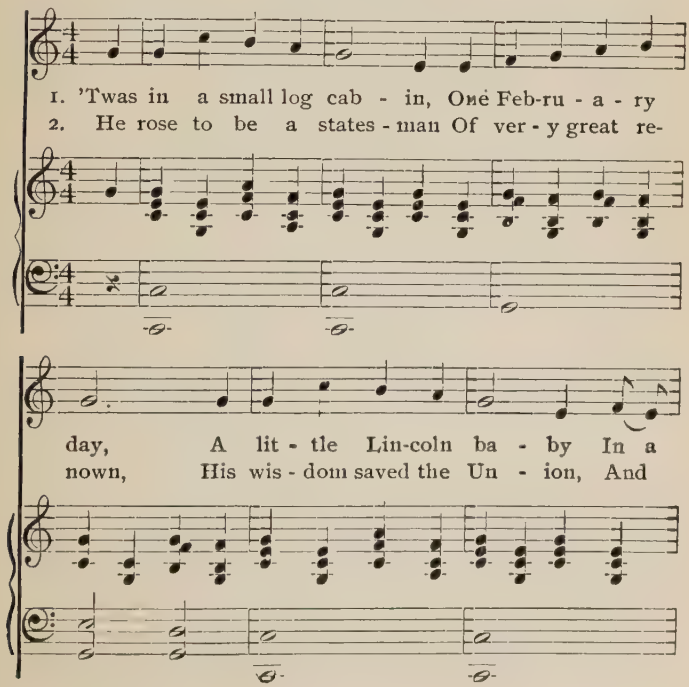
Winter '99.

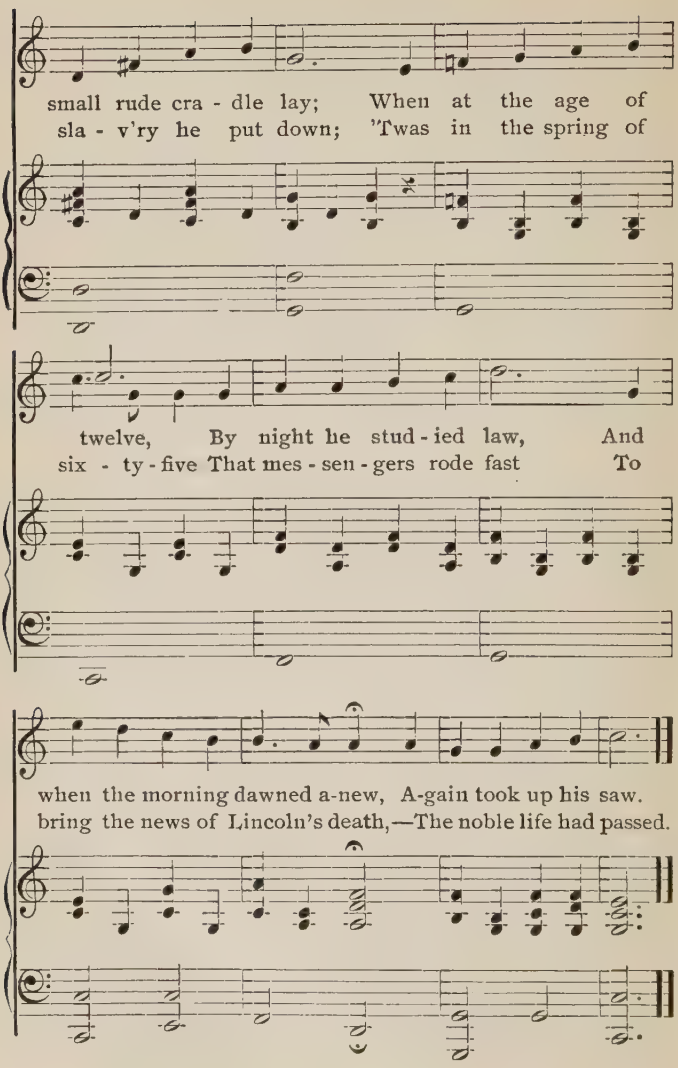

1. Val - en - tine's day is near - ly here, We
2. I'll send my friend a val - en - tine, The
hope the postman will bring us cheer; We'll clap our hands for
pret-tiest one that I can find; My cous - in will send
joy when he brings The ros-es, and doves, and pretty things.
one to me, And then how hap-py we shall be.

And finally, able to conceive of the stanza as a whole, realize that only a minimum of rhyme is necessary.

The twelve-year-old children completed two lines of a stanza for a winter song, but the effort was then abandoned, there being too much self-consciousness in the group to admit of free expression. Later their creative impulse triumphed and they produced a song for Lincoln's birthday:

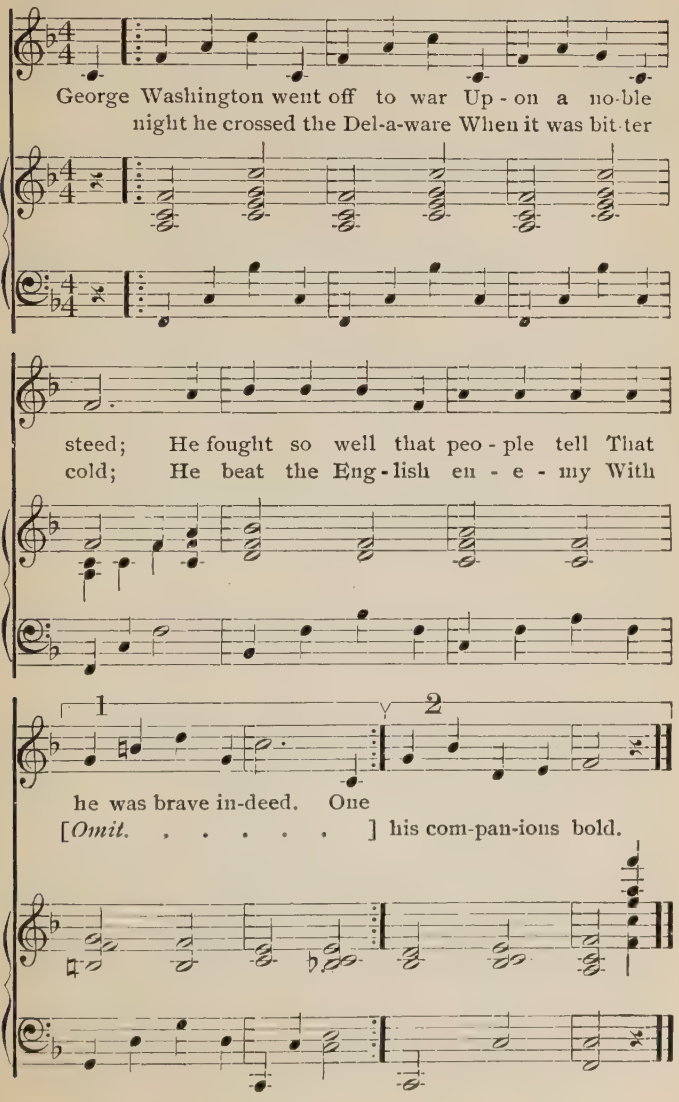
LINCOLN

Winter '99.

1. 'Twas in a small log cab - in, One Feb-ru - a - ry
2. He rose to be a states - man Of ver - y great re-
day, A lit - tle Lin-coln ba - by In a
nown, His wis - dom saved the Un - ion, And


small rude cra - dle lay; When at the age of
sla - v'ry he put down; 'Twas in the spring of
twelve, By night he stud - ied law, And
six - ty - five That mes - sen - gers rode fast To
when the morning dawned a-new, A-gain took up his saw.
bring the news of Lincoln's death,—The noble life had passed.

Winter '99.

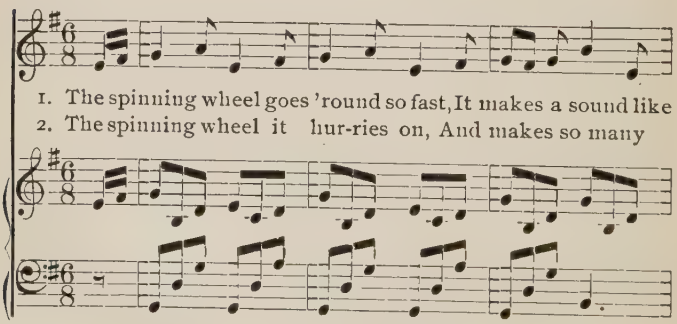
WASHINGTON

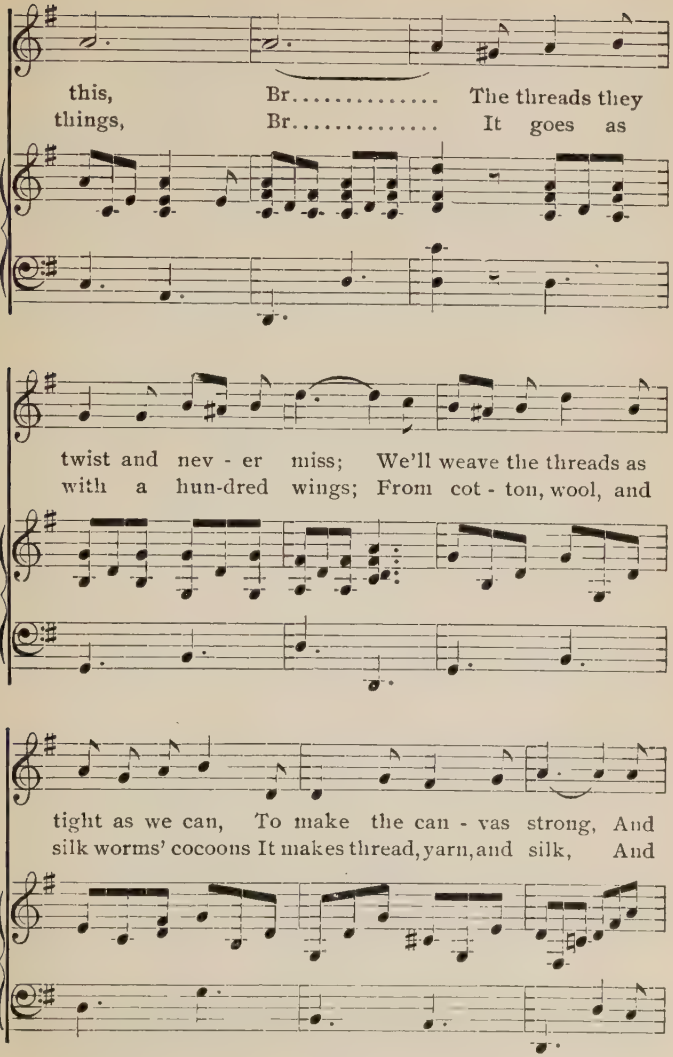

George Washington went off to war Up - on a no-ble
night he crossed the Del-a-ware When it was bit-ter
steed; He fought so well that peo - ple tell That
cold; He beat the Eng-lish en - e - my With
1
2
he was brave in-deed. One
[Omit. . . . .] his com-pan-ions bold.

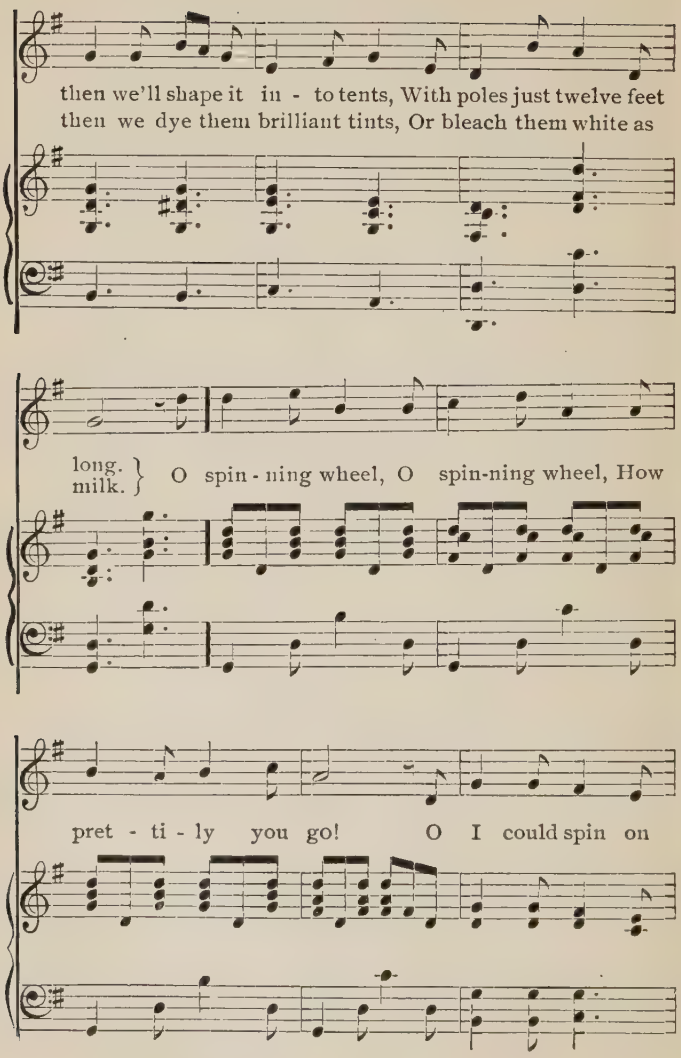
The eigh-year-old children followed the song on Lincoln with the above song on Washington.

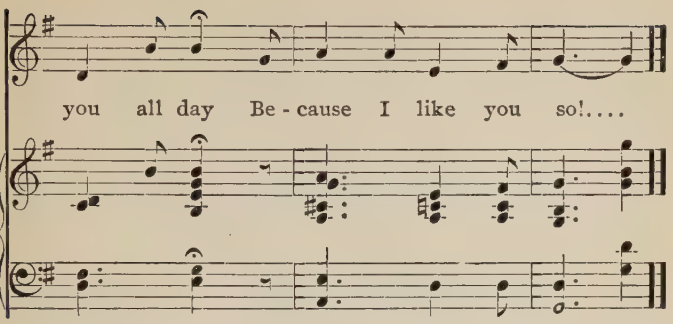
Both of these songs have been sung by the younger chorus at the respective anniversaries for two years, and are asked for at other times. It would be difficult to find songs written by adults which would appeal to the younger children's minds and hearts as do these, in spite of their crudities. The simplicity of thought and expression in the text, the sweetness and vitality of the melodies, exactly suit their needs. Practical trial for over a year has shown their preference for some of these school songs to the best child songs written by adults that have been presented to them. This applies to children from six to nine years of age—a time when they are not ready for involved idea or melody, and yet resent singing about what little dew-drop felt or little pussy willow said. The children seem to recognize the same attractive quality in the subsequent songs of these two groups, viz., Fourth of July and Spinning Song.

Spring and Autumn '99. SPINNING SONG




this, Br..... The threads they
things, Br..... It goes as
twist and nev - er miss; We'll weave the threads as
with a hun-dred wings; From cot - ton, wool, and
tight as we can, To make the can - vas strong, And
silk worms' cocoons It makes thread, yarn, and silk, And

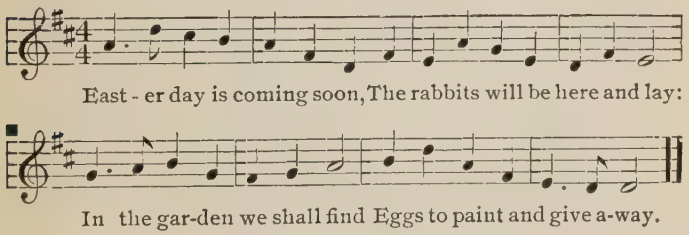

then we'll shape it in - to tents, With poles just twelve feet
then we dye them brilliant tints, Or bleach them white as
long.
milk.
O spin - ning wheel, O spin-ning wheel, How
pret - ti - ly you go! O I could spin on



As Easter approached, the six-year-old children, filled with anticipation of the day, asked to write a song about it. One child gave the first line with its melody; others quickly followed with the second and third lines. The fourth, however, required persistent effort before the requirements of rhythm and rhyme were met. The children showed no diminution of interest in wrestling with the problem.

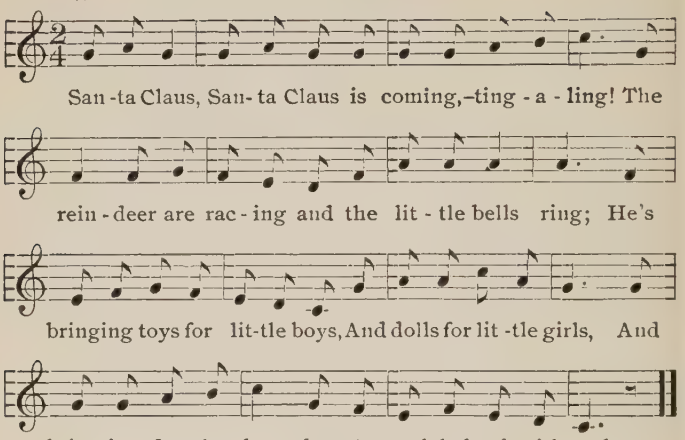
EASTER SONG

Winter '99.



Attempts made by the youngest classes of this school year have resulted equally well:

SANTA CLAUS*


Autumn '99.
San-ta Claus, San-ta Claus is coming,-ting-a-ling! The
rein-deer are rac-ing and the lit-tle bells ring; He's
bringing toys for lit-tle boys, And dolls for lit-tle girls, And
bring-ing for the ba-by A wool-ly lamb with curls.

The group composed entirely of musically developed children was the last to produce a connected song. The original scheme of work—the study of selected songs with its detail, and the learning of symbols for their own short melodic phrases—contented them. Emulation, however, urged them to write, and they undertook the task as imitators, thus with less exhilaration than the others showed.

Later a second impulse, more genuine than the first, resulted in one of the best of the school songs:

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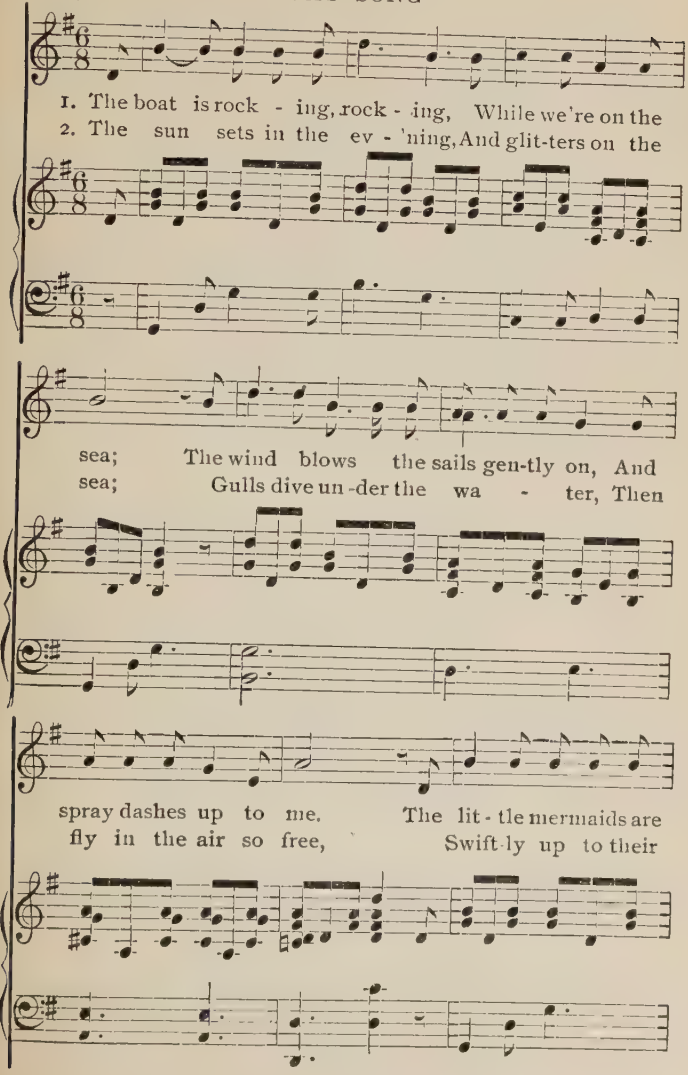
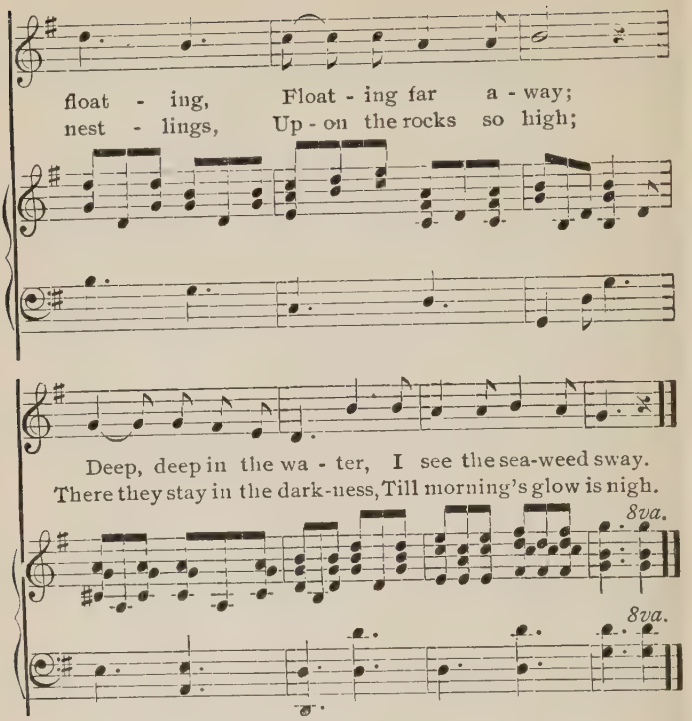
*To musicians these songs are unusually interesting from their close resemblance to early folk-songs and narrative ballads, especially to the early German and English folk-songs. "Santa Claus", for instance, might be taken intact from an old choral, for its simplicity, its movement, and the feeling for minor in the sixth, seventh and eighth bars. A. E. T.

Spring '99.

BOAT SONG


1. The boat is rock - ing, rock - ing, While we're on the
2. The sun sets in the ev - 'ning, And glit-ters on the
sea; The wind blows the sails gen-tly on, And
sea; Gulls dive un-der the wa - ter, Then
spray dashes up to me. The lit - tle mermaids are
fly in the air so free, Swift-ly up to their


float - ing, Float - ing far a - way;
nest - lings, Up - on the rocks so high;
Deep, deep in the wa - ter, I see the sea-weed sway.
There they stay in the dark-ness, Till morning's glow is nigh.
8va.
8va.

Composition work with the children has value in proportion to its being an untrammeled expression of their own musical consciousness. The teacher's task is to encourage through beautifying the child's thought by harmonic background. A stenographic report of the process of writing the text for a song by a group eleven years of age is an illustration of the method of procedure:

The following three lines had been made the week before:

The icicles hang from the windows high,
And the wind goes shrieking and howling by;
The bright moonlight shines down on the snow,

Some one wanted an adjective for snow and suggested "glittering," which was objected to on account of rhythm.

And one little rabbit goes jumping below,

was suggested for the last line. Some of the children objected to having the rabbit, saying that it was such a cold night, he would not be out, and suggested instead:

And hunters through the woods do go.

Another child suggested that the hunters would not be out at night; another insisted that that would be just the time they would be returning from a deer hunt. Some one wanted:

And hunters walking about below.

Another suggested substituting "Indians" for "hunters." Another suggestion was:

No flowers are blooming down below.

From time to time the teacher re-read the lines, so that they could get the rhythm, and, after a while, none of the lines suggested after the first being regarded as equal to the first, they went back to that. "Little," "lonely," "hopping," and "father" were suggested as describing the rabbit. "Lonely" was finally accepted as best suited to the verse. "Hunting" was substituted for "jumping," as more suggestive, and the line as finally accepted read:

And one lonely rabbit goes hunting below.

The teacher suggested that, as the first verse was about night, the second be about the day.

Some of the children wanted a chorus. The teacher suggested that this was not a jolly song, so that it did not lend itself easily to a chorus; but if one appropriate could be thought up, it could be used. None could be thought of at the time, so the second verse was begun.

The first line suggested was:

As the day grows near and the night grows far.

"Comes," and finally "draws," was suggested in place of "grows," and "passes" in place of "grows far." "Passes away" was objected to on account of the number of syllables.

The teacher suggested that, as they were going from a night verse to a day verse, it would be well to put the night idea first. It was then given:

As the night disappears and the day draws near.

The next line was at once suggested:

Again the cheerful birds we hear

The next two lines were suggested as:

Jumping about on the fleecy snow,
Hopping around do the snow birds go.

One of the children suggested that the snow birds are about a house, and she wanted the song about a lonely place on the mountains. The last two lines were objected to on the ground that birds had just been mentioned. The child who proposed the line said she was simply telling what the birds did. Then this was opposed on the ground that in the first verse the rabbit had been doing about the same thing.

The teacher suggested that they refer again to the rabbit and tell what became of him in the day.

And the same little rabbit goes hopping away,
For he's found something to feed him that day,

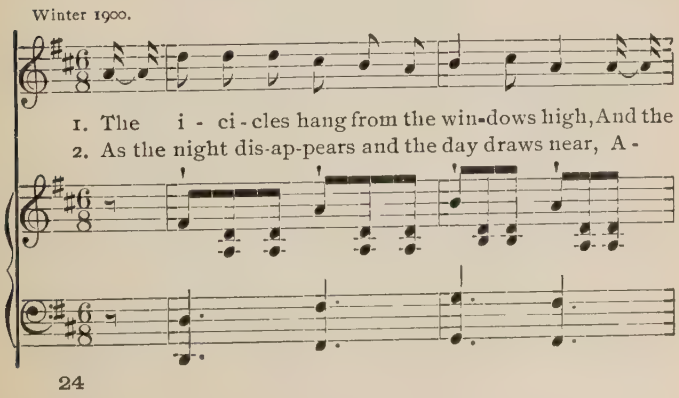
was suggested. "Same" was objected to, "little" suggested in its place, and finally "gray" accepted. "For" objected to, and "because" rejected, and finally "with" accepted. One of the children wanted to suggest "*manger*" for "to eat," saying that French words were often used in a song.

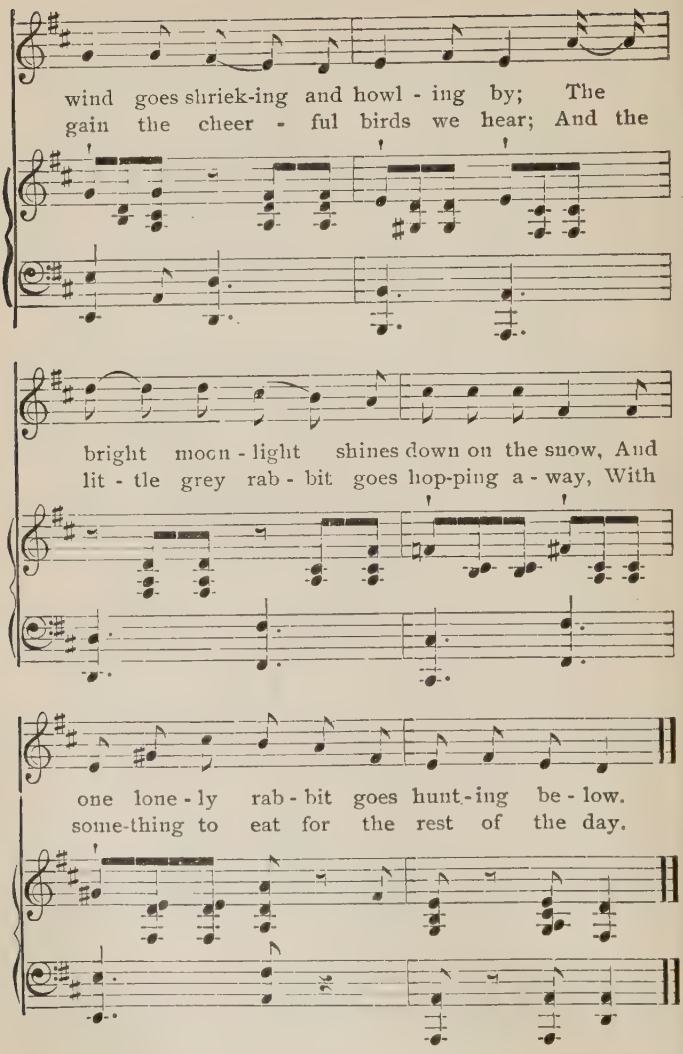
The whole song as finally accepted read:

The icicles hang from the windows high,
And the wind goes shrieking and howling by;
The bright moonlight shines down on the snow,
And one lonely rabbit goes hunting below.

As the night disappears and the day draws near,
Again the cheerful birds we hear;
And the little gray rabbit goes hopping away
With something to eat for the rest of the day.

A WINTER SONG




wind goes shriek-ing and howl - ing by; The
gain the cheer - ful birds we hear; And the
bright moon - light shines down on the snow, And
lit - tle grey rab - bit goes hop-ping a - way, With
one lone - ly rab - bit goes hunt-ing be - low.
some-thing to eat for the rest of the day.

The melody of this song was given without criticism by the four members of the group present, one musical phrase from each child in succession, so that text and song were completed in two half-hour periods. The smaller the group, the less confusion arises from various phrases being given at the same time. To avoid this confusion it was at first attempted to give each child in turn an opportunity to offer a phrase, with the result that none were offered. The work cannot be done under formal restrictions.

As no record has been kept of rejected phrases in the process of writing a song, only the method of procedure can be given here.

After the children have selected their topic and written their text, a musical setting for the first line is called for. A quick response usually follows. If several phrases are given, the children choose their favorite. The second phrase, suggested by the first, follows readily. The third usually presents more difficulty. It is unconsciously realized that this in a four-phrase song gives the character to the whole and should contain a climax, and it is criticized and labored over, sometimes during several periods. The final phrase is usually an obvious one; the readiest child gives it, and others remark it is just what they were going to offer. Originality in a final phrase—as in the Winter Song—is greeted with enthusiasm.

That composition work gives the children a grasp of rhythm is shown by the way they handle it in making their songs effective. A seven-year group completed a Snowman Song in 3-pulse measure rhythm and sang it to the school. Later they felt that its flowing rhythm was not suited to the requirements of the

words and found by experiment that by using the more energetic 4-pulse the character of their melody became what was desired.

The twelve-year-old children after completing their rollicking Fourth of July song experienced a reaction. They felt they had not expressed their highest musical consciousness, and wished at once to begin a song into which they would put their best effort. As the Fourth of July song had met with enthusiastic approval from the school, this impulse showed a normal growth and as such was encouraged. That it was genuine was proved by the children's slow and critical work, lasting through the remainder of the spring quarter, resumed after the summer vacation, and carried on through more than one-half of the autumn quarter. They suggested and directed the piano accompaniment at important points, and, after the song was completed and sung to the school, further embellished it by adding a second-voice part.

No claim is made that these are productions of genius, any more than the average child s drawings are. The point is that they compare favorably with his drawings, and even with many school songs. Above all, they, like all constructive work, cultivate the appreciation of the details and beauties of a piece that can never be reached simply by singing other people's productions.

Music for children.

When we say that children should hear and be taught only good music, we are saying vain words, for there is as yet no unanimity as to what good music for children is. Much is condemned as unchildlike, as not appealing to children; while gay jingles that make them jump with glee, are

characterized as "rag time." Between this Scylla and Charybdis the average parent and teacher can not hope to steer. We can not tell good music from bad, and we may as well confess it and adopt on faith the tenets of some one school, without hoping to understand their reasons.

We should not, in any case, neglect the subject, for music has undoubtedly an effect upon the emotional disposition. Plato excluded from his ideal republic all music except that which stimulates courage and the nobler emotions. All nations from the earliest times have employed music at critical periods to stimulate them to a greater effort than was possible without. To-day physicians employ it for the beneficial effect upon the insane, idiotic, imbecile, and neurotic. We can not, therefore, afford to neglect it in education.

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CHAPTER XVIII

Drawing

1. Before reading this chapter, draw the story of Goldilocks and the Three Bears. Then compare with the pictures and descriptions given in the chapter. **Observations.**

2. Make a collection of drawings of the story of Goldilocks. Observe these precautions:

(1) Tell the story to the children just before they draw, so that it will be vividly present to their minds.

(2) Give them as much choice in the material for drawing as possible — crayon, black and colored pencil, paints, etc., large and small sheets of paper.

(3) Give them as much *time* as they want, but have the pictures finished at one sitting.

(4) In the case of little children, label at the time any ambiguous objects.

3. Make a collection of children's spontaneous drawings, especially of the very first ones, made by the child of eighteen months or so. Note how much encouragement the child received, and how much criticism and instruction.

4. Keep a dated record of the child's likes and dislikes of colors and bright objects.

As far back as we can penetrate, ancient peoples always had a love for bright objects, or for rare or

curious things, and always loved to decorate themselves. Among savage people of to-day, there are the same desires. Many motives unite to strengthen these feelings, such as the desire for admiration from the opposite sex, and the instinct of property; but there seems also to be a spontaneous love for bright and glittering things, that is the germ of the esthetic sense.

Love for beauty universal.

What the origin of artistic creation or expression was is still much disputed. It is so divorced from practical values, so apart from everyday life, that many have considered it a sort of excrescence that can not be explained by natural laws. It seems most reasonable, however, to suppose that it was at first the occupation of an idle hour when the primitive man's supply of food was abundant, when he had rested, and when his mind recalled in thought the previous experiences of the chase or of war. Then, in the song and the dance, he reproduced the catching and killing of the prey; or with a sharp stone drew them upon his hunting knife.

Both of these interests appear in little children; they love to hoard up bright things and to deck themselves with them; they reproduce in play and sometimes in drawing their own experiences, although this first drama, song, or drawing is crude, and the love for it often intermittent. To trace the character of the growth of these interests is our present object.

The subject of children's artistic sense includes properly drawing, painting, modeling, music and story-telling. Only drawing and music can be considered here, with occasional references to the other branches of art, and it should be understood that, as

in all the subjects with which we have dealt, it is impossible to free the child entirely from adult influence. At the very least, his taste is affected by the pictures in his home, the style of furniture, clothes, etc., and usually he is helped in his first attempts to draw by a copy made by his elders, and his own work is criticized or praised.

Adult influence.

For the sake of convenience, the subject of drawing may be divided into two parts: (1) the appreciation of pictures, and (2) the making of pictures. Under the first head will also be included the very few observations that have been made on children's color sense.

Love of color.

The baby is first attracted by bright objects, regardless of their color or form, especially if they are moving. Preyer's boy showed delight on the twenty-third day at the sight of a brightly lighted rose-red curtain, and when he distinguished colors, at the age of two, red and yellow were favorites, and blue and green least acceptable. So also with Miss Shinn's niece. Baldwin's child, on the contrary, liked blue best, white and red following closely. Unfortunately no yellow was used in Baldwin's experiments. Brown was a nearly neutral color to his child and to Miss Shinn's niece. As a rule we should probably find that the bright luminous colors would be chosen; thus a bright blue would be preferred to a dark red or vice versa, regardless of the color to a certain extent. But there is little evidence on this point. Another characteristic to be noted here is that contrast plays a large part in a child's appreciation of colors.

Appreciation of form is not, at first, separated from movement, color, and size. Children as a rule like

little things, probably because they have the feeling of power over them, of ability to protect and caress them, which they cannot have toward a large object. In form we find also not so much a love for symmetry, though that is present crudely, as for the movements of the object, and for those qualities which are connected with the children's own lives.

Love of form.

Sully thinks that the love of flowers is the nearest approach of the child to pure esthetic enjoyment, although different qualities attract different children. With some the enjoyment is almost entirely one of smell; with others, a love of personal adornment. It seems to be much the same with very small boys and girls, but later the boys learn to despise their leanings toward such things.

In all this, the child follows, in the main, the race development: bright or gaudy colors before delicate ones, and the utilitarian value of objects before the esthetic. This appears again in the fact that few children care about landscape beauty. The sublimity of mountain or of sea arouses only fear, and the beautiful and lovely are lost in the child's interest in some detail that appeals to him.

It is said, how truly I do not know, that in Greek literature there are very few passages that show any esthetic appreciation of nature. The sea is the barren sea; the land is much plowed, fertile, wooded, etc., the adjectives always pointing to the value to man.

At first the baby acts like an animal with regard to representation of objects. He thinks the reflection in the glass is a real thing, as the animal does the well-painted picture, and as the savage thinks that his reflection in the water is his spirit-double.

Love of pictures.

At a very early age, even as early as eight months, some children learn to recognize pictures, and they reach to them as to realities. The discrimination in such cases may be quite fine. Miss Shinn's niece, when fourteen months old, picked her father out of a group of nine, although the face was scarcely more than one-fourth of an inch in diameter. This recognition, however, is a very different thing from recognizing the picture as a picture, *i. e.*, as a symbol or copy only, of no use in itself. Children do not learn this nearly as readily. Even at four years we sometimes see them trying to feed the picture. One boy at this age saw a picture of people going to church. The next day on seeing it he exclaimed in surprise because they were not yet there. Miss Shinn's niece, at the age of three saw a picture of a chamois defending her kid from an eagle, and put her hand between them to defend the kid. At the age of two she tried to lift the painted branch that lay across a lamb in a picture.

We see the same thing in the tendency to consider a drama as a reality, in the confusing of the make-believe Santa Claus with the real one, etc. Only by slow degrees does the child learn to take one object as representing another, and as having no value in itself. The use of symbols seems to be an acquired power, not a natural one, and at first there is confusion of the symbol with the reality for which it stands, in proportion as the feeling is strong. We see this illustrated again and again in adult life, in religious observances.

Whether children at any given age recognize clearly the difference between the picture and the object or

not, their likes are interesting to us from the standpoint of schoolroom decorations. Mr. O'Shea's observations, at first glance, are rather discouraging. He found that the children, as a rule, cared nothing for the reproductions of classics. Colored pictures, even the crudest chromos, and "cunning" pictures — little children and animals playing — were always chosen except when Santa Claus or the Mother and Child were present. In many cases when asked what pictures were in their schoolrooms the children would be able to name only one or two out of a large number. The others, apparently, had made no impression upon them. They were over their heads figuratively as well as literally. If this is true of children generally, the problem of schoolroom decoration is hardly as simple as many people think.

Children's preferences.

We are wont to assume that, given the money and a knowledge of classical painting and sculpture, a perfectly equipped school will result. I have been in several schools that to the adult eye are wonderfully artistic in their decorations, considering the scanty means at the teacher's disposal. But how much do the children get out of it? The same question might be asked about many of our kindergarten rooms.

Now, we are not reduced to nothingness if we do pay attention to the children's tastes. There are the Madonnas, and the many beautiful pictures of little children. In animal life the paintings of Landseer and Rosa Bonheur make a good beginning, and there are many others. We need not lower our standards of the esthetic, but simply change our subjects, according to the interests of the children. If this were carefully carried out, the pictures in the eighth grade room

would be quite different in subjects from those of the kindergarten, instead of both only reflecting the teacher's tastes.

A more practical aspect of the liking for pictures is brought out by Mr. Lukens. He says that children are interested especially in pictures that have stories connected with them, and frequently are interested in them only when the story is told. He suggests accordingly, that the pictures in primers should stimulate the child's curiosity and so rouse a keen desire to learn how to read.

In considering childish creations or inventions, we should properly include much more than their drawings, but we can only touch upon these other things here. All such forms of activity are very closely related to play, in so far as they are spontaneous, but in the adult, at least, they are distinct from it in that they involve a social aspect not essential to play.

Child's love of drawing.

Dewey says that the artist differs from the artisan in that he sees in his work its social value, and sees himself as a medium for the expression of social forces. That is, the shoemaker who appreciates the social possibilities in shoes would become an artist.

The child at first makes no distinction between the fine and the useful arts. Only by degrees does he separate the value to himself from the general value; the useful from the beautiful. His first activities are controlled by his own enjoyment of them and not by any results that are objectively useful to him or to others. This is play par excellence. So the virtuous acts of a child are not virtuous to him, but are repeated because they give him the approval of others. It

would be interesting to find out at what age vanity or the love of one's own beauty would develop if it were not forced by the talk of the child's elders. One would hardly expect it, or the love of pretty clothes as such, to appear before adolescence, except in the crudest way, in the love for bright things that we have already mentioned.

What children draw.

When we consider what children themselves draw, we have one valuable way of discovering their interests. Actually they seem to draw almost everything that they have ever seen, but certain prominent interests also appear. The observations that have been made give these results: Little children, as a rule, do not draw objects that are before them. Of objects that were absent, 45 per cent drawn between five and six were human figures, 23 per cent animals, 35 per cent plants and flowers, 32 per cent houses, 40 per cent still life, 5 per cent conventional design, 3 per cent ornamental; between fourteen and seventeen years ornament and design rose to 8 and 37 per cent; human figures made up 5 per cent, animals 10 per cent, plants 11 per cent and houses 4 per cent. These were drawings made in school, and the same things appear in 1232 spontaneous drawings. If we put together all the pictures containing human figures, they aggregate nearly three-fourths of the entire number. Figures in motion are more commonly drawn than figures at rest, and show greater ease.

Mr. O'Shea's observations also confirm these as regards ornament. He found that children under five never tried to draw the accessories of a figure; 50 per cent of those eight years old tried and 87 per cent of

those sixteen years old. Miss Flander's observations show the same thing.

Mr. Lukens again presents for our consideration the practical value of such spontaneous drawing. He advocates it as a harmless method of inoculation against real escapades. That is, he appears to think that the boy who draws vividly the various scenes in the life of Daredevil Dick of Coyote Range will have no desire thereafter to run away from home and live out some of the adventures about which he has read. Possibly a good drawing of himself smoking, swearing, etc., will take the place of the reality, and he will escape the temptations of craps and playing for keeps by picturing his defeat in them!

However this may be, there is little doubt that drawing is often a good test of the child's understanding of the words he uses. Doubtless you are familiar with the child's pictorial rendering of "The Old Oaken Bucket"—a circle for the well; three buckets, for the old oaken bucket, the iron-bound bucket, and the moss-covered bucket; and a number of dots representing the "loved spots that her infancy knew." Again, most sketches of Jack and Jill show them as twin brothers.

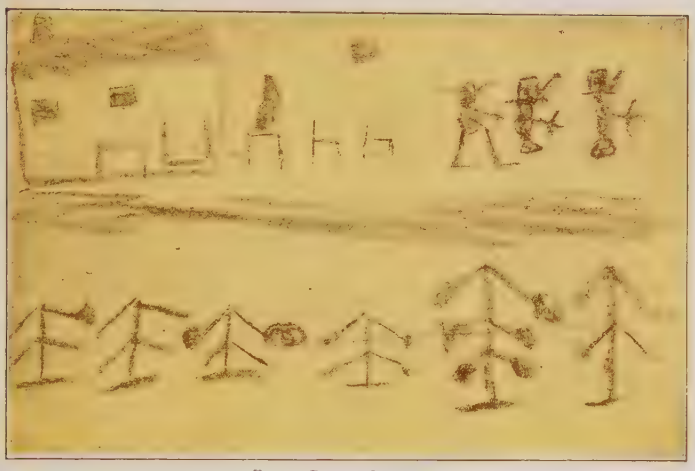
In tracing the development of a child's drawing a very neat parallel has been worked out between it and speech, thus:

SPEECH	DRAWING
1. Automatic cries and reflex or impulsive sounds.	1. Automatic and aimless scribble.
2. Imitation of sounds but without meaning.	2. Scribbling localizations; imitation of movement of hands.
3. Understanding of words without speaking, except such words as names.	3. Same, with only simplest localization of features by scribbling.

SPEECH	DRAWING
4. Repetition of words as mere sounds when said to him (brief stage and of little importance).	4. Copying from others to see how to get right effect in use of lines.
5. Use of words to express his thoughts.	5. Picture writing, illustrated stories, etc.
6. Study of grammar and rhetoric.	6. Study of technique of drawing.

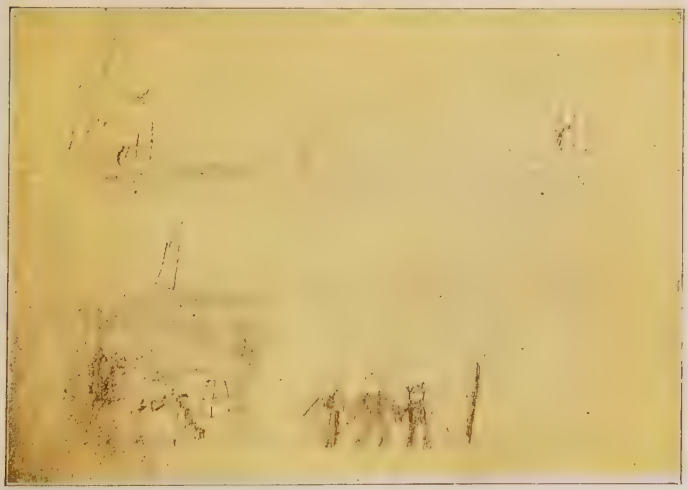
Baldwin's observations on his daughter have been confirmed by later observers, and may be given here as illustrating the development outlined above. Beginning with the nineteenth and extending to the twenty-seventh month, he found that the drawing was only the vaguest imitation of the movement of his hand, no connection being recognized between the hand work and the lines. Helen could identify the copy, but not her own drawing unless she remembered what she had been trying to make. The same drawing would serve for a man or an animal, as she pleased. Sometimes also a child will begin scribbling either aimlessly or with the intention of making some object, and will accidentally happen upon some unexpected form. He will then adopt this and copy it again and again. For instance, a small boy happened to make curls that looked like smoke, whereupon he exclaimed in glee, "Puff, puff!" and made more. The only development here is in the freedom of movement. The lines change from angular straight lines to curves; instead of running all one way, reverse movements with loops occur, although the lines are almost always horizontal or sloping slightly to the right like ordinary handwriting. As would be expected, the entire arm is used at first and later the wrist and finger movements.

Scribbling.



FIRST GRADE PICTURE

Character	*Per cents*	*Character*	*Per cents*	*Character*	*Per cents*
Scenes	35	Series	1	Bears	69
Fragments	65	Houses	84	Girl	50
Interiors	1	Trees	55	Bears and Girl	32



SECOND GRADE PICTURE

Character	*Per cents*	*Character*	*Per cents*	*Character*	*Per cents*
Scenes	88	Series	0	Bears	61
Fragments	8	Houses	93	Girl	69
Interiors	2	Trees	65	Bears and Girl	39

Plat

In the twenty-seventh month Helen got the idea of making each part of the figure, and from that time there was the attempt to make a copy, to follow an idea or object. She saw the connection between the pencil marks and the thing that she wanted to make and now directed her attention to the marks instead of to the movements. This is the time when drawing or the representation of an object really begins. Up to this time the use of the pencil has been only a form of exercise; now, it is a new language. It shows one interesting feature in common with language, and that is, that the first drawing tends to stand for all things. Thus Helen first drew a man. Later, in drawing birds she put into her drawing many of the marks which stood for a man.

Copy.

In this early work, the children do not appear to copy from the object, even when it is before them. A child told to copy a man lying down, draws him as she draws other men, standing up. She may notice later the discrepancy, but at the time it does not trouble her at all. She draws the object as she knows it, not as she sees it, because the picture is a true language to her. Thus she shows people through the sides of the houses, and all the sides of the house, and the legs of the chair, etc., regardless of the actual appearance.

Draw what they know.

A child has little or no technique, and so simplifies many things until the drawing seems to be little more than a symbol of the object; but that it is not symbolic to him is shown by his putting in striking details to identify particular persons or things. He has no sense of proportion or perspective. Men are taller

than houses, birds and dogs are of the same size, and all appear in one plane.

Barnes thinks that this lack of unity in the picture is due to the fact that the child thinks in very small units, and fails to look at the picture as a whole. He draws the outside of the house, then, going on with his story, he shows the people doing various things inside the house, forgetting about the outside. It comes out again in the fact that often a child will repeat some detail in the story again and again without seeming to notice the rest. One child drew twenty-six Johnnies in "Johnnie Guck in Die Luft" and nothing else.

Almost without exception the first pictures are outlines or diagrams, not mass drawings. Whether they are symbolic and conventional, or diagrammatic is a point of dispute. Sully thinks that they very soon become conventional, that the child adopts a certain outline for man, another for trees, etc., and sticks to it regardless of the various kinds of men and trees that he knows. Lukens, on the other hand, regards this, when it occurs, as a case of arrested development and to be deprecated. If the child is allowed to develop freely, he thinks that there will be a progress in the production of natural effects. I am inclined to agree with Mr. Lukens on this, and I feel sure that what Mr. Sully says is true, that many children are really led into this conventionalism by our very methods of teaching. One mass appearance represents apple-trees, another pines; and we teachers frequently do not know enough to appreciate an individual apple-tree when the budding Corot gives us one, but condemn him to draw apple-trees in general.

Outlines.

THIRD GRADE PICTURE

Character	*Per cents*
Scenes	85
Fragments	2
Interiors	3
Series	8
Houses	86
Trees	85
Bears	46
Girl	72
Bears and Girl	28

FOURTH GRADE PICTURE

Character	*Per cents*
Scenes	84
Fragments	007
Interiors	12
Series	3
Houses	86
Trees	83
Bears	34
Girl	77
Bears and Girl	23

Plat

second grade fewer faced front, and more sideways; and in the seventh and eighth grades most faced to the left. Joints were first drawn by fourth grade children.

Drawing of stories.

In the illustrating of stories, Earl Barnes found that freedom in drawing, as shown by the number of scenes, increases up to the age of thirteen, and then decreases to sixteen. All the children who declined to draw were over thirteen. Here again we find the self-consciousness of adolescence, the feeling of inability in the presence of new ideals.

In all cases, the children prefer large, distinct figures, especially for the hero. In the story of Johnnie, the little boy is often made much larger than the men who rescue him. We have a nice analogy here in the Greek custom of representing heroes and gods as larger than ordinary men.

We find a similar case in the exaggerations given to details which are prominent in the child's mind. A pair of glasses will dominate the entire picture; a watch chain will spread over the whole front; vest buttons of heroic proportions will appear, or some characteristic attitude will be represented in its extreme. The child is an unconscious caricaturist. One curious fact here is that the catastrophe is not drawn nearly as often as the scenes just preceding and following it. Mr. Barnes lays this to a sense in the children like that in adults, which leads them to enjoy most the suspense, and afterwards the pleasure of rescuing the lucky hero. It seems that one may fairly question this explanation, though it is difficult to offer a satisfactory one in its place. We can hardly think

FIFTH GRADE PICTURE

Character	*Per cents*	*Character*	*Per cents*	*Character*	*Per cents*
Scenes	84	Series	0	Bears	28
Fragments	0	Houses	83	Girl	64
Interiors	15	Trees	77	Bears and Girl	9

SIXTH GRADE PICTURE

Character	*Per cents*	*Character*	*Per cents*	*Character*	*Per cents*
Scenes	61	Series	0	Bears	36
Fragments	20	Houses	58	Girl	58
Interiors	17	Trees	59	Bears and Girl	22

the children would consider the catastrophe too difficult. Perhaps it may seem too complicated to attract them.

The observations made by Miss Flanders upon one thousand children from four to fifteen years old, who drew the story of Goldilocks and the Three Bears, confirm Professor Barnes', and add some further interesting details. Many of the drawings were with colored chalks, which the children preferred when given a choice, and with which they drew better than with black and white. In the kindergarten, most of the children use lines instead of mass; a few mass, and a few both. In the first grade, where instruction in drawing begins, the figures are almost equally divided between the two; and beyond the first grade, mass is used nearly always, showing the effect of instruction. This again leads to the conclusion that children naturally draw in line, even when given a medium like crayon, that lends itself to mass; but that they can soon be taught to see and draw in mass.

Experiment with Story of Goldilocks.

The effect of the teacher upon the children also comes out very distinctly in these papers. Where the teachers like drawing the children are freer in expression, improve more rapidly, and enjoy the work better.

The gradual changes in the pictures from kindergarten through eighth grade drawings are shown in the series running through this chapter. The figures with each picture show the percentage of children in that grade who drew essentially the same picture, and also the variations from it. The remarkable thing about these pictures is their uniformity of scene. Why do the children choose a

Development and scenes.

scene which is really so little connected with the story? Why do they take a landscape instead of an interior?

In the second grade, sky and ground are shown as meeting; before that, with a space between. There were very few *series* of drawings, probably because the children have not been shown how to draw in that way. In the higher grades more detail appears in the drawings. Throughout, the details are copied from what the children see about them—a peculiar style of window; high stair in front of the house; family portraits on the walls. The totals of Miss Flander's work are seen in the following summary.

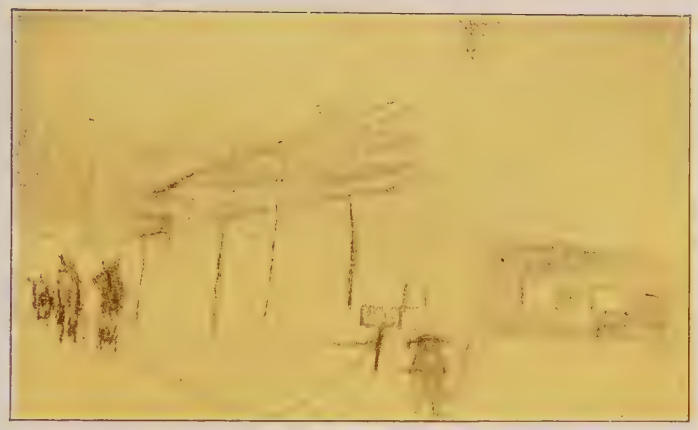
All the pictures have houses: 10 per cent in mass; 80 per cent in line; 9 per cent in both; 14 per cent transparent; 5 per cent with doors; 12 per cent with knobs; 2 per cent with door panels; 69 per cent with windows; 6 per cent with curtains; 65 per cent with chimneys; 41 per cent with smoke.

Sixty-eight per cent have trees: 9 per cent in line, 73 per cent in mass, and 16 per cent in both; 34 per cent have forests, and 1 per cent flowers.

Sky and ground are shown by 65 per cent, ground alone by 15 per cent, and sky alone by less than 1 per cent.

Bears are shown by 47 per cent; with bear shapes 27 per cent, human shape 20 per cent, animal shape 21 per cent. Their faces are: profile 55 per cent, full 23 per cent, double 21 per cent. Of features, 20 per cent have eyes, 45 per cent tails, 9 per cent arms.

Goldilocks is drawn by 66 per cent. She is allowed head, neck, body, skirt and feet by $3\frac{1}{7}$ per cent; head, body and feet by $5\frac{5}{7}$ per cent; head, skirt and feet by $10\frac{4}{7}$ per cent; head, body, skirt and feet by $68\frac{5}{7}$ per



SEVENTH GRADE PICTURE

Character	*Per cents*
Scenes	45
Fragments	9
Interiors	9
Series	36
Houses	70
Trees	70
Bears	61
Girl	73
Bears and Girl	46

EIGHTH GRADE PICTURE

Character	*Per cents*
Scenes	52
Fragments	18
Interiors	20
Series	9
Houses	68
Trees	64
Bears	27
Girl	56
Bears and Girl	14

Plate

cent; head and skirt only by $2\frac{6}{7}$ per cent; full face in $22\frac{6}{7}$ per cent; doubtful outlines in $41\frac{6}{7}$ per cent.

As to features, she is allowed eyes by $23\frac{5}{7}$ per cent; nose by $21\frac{4}{7}$ per cent; mouth by $19\frac{3}{7}$ per cent; ears by 1 per cent, and hair by $47\frac{4}{7}$ per cent; feet by 76 per cent; shoes by 33 per cent; arms by 50 per cent; hands by $9\frac{2}{7}$ per cent; fingers by $5\frac{2}{7}$ per cent.

Certain conclusions are easily reached on the basis of these facts. It is evident that drawing should begin with the human figure as a whole and not with conventional designs, and should only by degrees work up to the analysis involved in the latter. The method of using drawing, to illustrate stories, scenes from child life, etc., is to be commended instead of a conventional course in drawing.

Figures vs. conventional designs.

Ruskin laments the devotion of the school to geometrical forms. He says: "A great draughtsman can, so far as I have observed, draw every line but a straight one. When the child longs to turn out men, dogs, cars, horses, heroes, etc., he is showing his freedom; but he is bidden to draw a straight line, a curve or the like. When nature intended him to be as yet a player, an artist only, the school seeks to make him a geometrician; when he desires to make many lines, he is confined to one; when he endeavors to produce a whole, it seeks to make him produce parts only. Neither the child nor primitive man begins with a geometric line---it is in a scribble that the history of graphic art lies hid."

These facts would also lead us to conclude that children draw naturally in outline instead of in mass, and that shadow, etc., should be introduced by degrees as the child learns to separate knowledge from sight. It

can hardly be said that all these children would use outline naturally if there were not some reason for it. Technique should be introduced slowly. Probably by the age of nine most children will appreciate some help in this direction.

Too often children are simply taught certain technical tricks, but are not taught to observe, with the result that high school boys and girls draw no better than those in the third grade. Back of all drill in technique must be the observant and interested mind striving to express an idea. So above all things we must take care not to destroy a child's spontaneous love for drawing by making him self-conscious and distrustful. The ideal thing would be for us all to draw as easily as we write, when it will serve our turn, and there is no reason why we should not if given the proper training.

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CHAPTER XIX

Play

Observations.

1. Get data from children of all grades in fall, winter, spring and summer, as to the play that they like the best of all.
2. Get data about clubs and societies that are formed and managed without adult encouragement and aid.
3. Keep records as to the plays of little children.
4. Collect accounts of plays and games used in formal education, stating the purpose for which they are used and how far they accomplish the purpose.

Education in play.

In taking up the subject of play, we shall find many connections with the topics previously discussed. Play seems to be to a large extent the form in which childish ideas express themselves. It is to the child what his life-work is to the man, and shows therefore most clearly what his nature is when left to himself. On this account observation of the free play of children is of great assistance to a teacher in learning their true characteristics.

Even from the earliest times there have been educators who differed from the Hinterschlag professor. This worthy man knew of the soul only "that it had a faculty called memory and could be acted upon through the muscular integument by the application of birch rods." On the other hand, 2300 years ago Plato said: "The plays of children have the mightiest influence on the maintenance of laws—from the first

years of childhood, their plays ought to be subject to laws, for if they are arbitrary and lawless, how can children ever become virtuous men, abiding by law?" Aristotle advised that the children before five years of age "should be taught nothing lest it hinder growth, but should be accustomed to use much motion—and this can be acquired by various means, among others by play, which ought to be neither too illiberal nor too laborious nor lazy." Luther tells us that "Solomon did not prohibit scholars from play at the proper time. A young man shut up (without recreation) is like a young tree which ought to bear fruit but is planted in a pot."

Locke asserts that "the gamesome humor of childhood which is wisely adapted by nature to its age and temper, should be encouraged, to keep up their spirits and improve their health and strength. The chief art is to make all that children have to do, sport and play." He invented games for teaching reading, and suggested others. Richter in his Levana says that "activity alone can bring and hold serenity and happiness. Unlike our games, the plays of children are the expressions of serious activity, although in light, airy dress. Play is the first poetical (creative) utterance of man." Schiller says, "Man is man only when he plays."

Finally Froebel, in the Education of Man, says: "Play is the highest phase of the child development—for it is self-attentive representation of the inner life from inner necessity and impulse. Play is the purest, most spiritual activity of man, at this stage, and at the same time typical of human life as a whole,—of the inner, hidden, natural life

Froebel on play.

in man and all things. It gives joy, freedom, contentment, inner and outer rest, peace with the world. It holds the sources of all that is good. A child that plays thoroughly, with self-active determination, will surely be a thorough, determined man, capable of self-sacrifice for the promotion of the welfare of himself and others. The spontaneous play of the child discloses the future inner life of the man. If the child is injured at this period, if the germinal leaves of the future tree of his life are marred at this time, he will only with the greatest difficulty and the utmost effort grow into strong manhood."

More recent study and observation have served only to emphasize these utterances and to show in detail their truth. Spencer tells us that all education, so far as it is true, tends to revert to play, and Preyer compares the child's play, in its value to him, to the work of the learned man.

Play and work.

The distinction between play and work is a difficult one to draw. It is evidently not merely in the acts, nor in their result; to Tom Sawyer, white-washing the fence was the hardest sort of drudgery, but he made it into play for his boy friends and made them pay him for the privilege of playing at it. Again, if a boy has to play marbles when he wants to go to a fire, the play becomes work. We often say that if we had to do as work what we play at—camping out, making century runs, etc., we should consider ourselves much abused. It is not alone the amount of effort, therefore, or the fact of having a definite end, that makes an activity work instead of play. It seems to be rather that the activity is pleasurable and spontaneous; that there is no

external or internal compulsion laid upon the player. Play in this sense includes all truly artistic work. It is not the opposite of work but the best way of doing work. It is working in the spirit of love, instead of in the spirit of duty. And yet we distinguish such work from play in that it does, after all, go beyond itself in the artist's appreciation of the ethical and social value of his art.

Shut out play from work, and we get weariness and stupidity, we exclude growth, physical, intellectual and moral. The child who does not like play is abnormal. He is sick or stupid. He ought not to prefer to sit in his seat when the others are romping. Such a child is very likely to exhibit some of the signs of nervousness described in the first chapter, or signs of poor nutrition—either not enough food or else not the right kind. A distinction should also be made between games and play. All games are play, but not all plays are games. Games are organized, systematized play, and involve more than one child.

Theory of play.

Groos in his theory of play, considers the physiological, biological and psychological factors, in order to get a complete theory.

1. The physiological standpoint.

There are two principles to which we must refer for a physiological theory of play, *viz.*, the discharge of surplus energy and the recreation of exhausted powers. The first is likely to occur when, through rest or disuse, any set of organs has stored up more force than it needs, which force, therefore, tends to find an outlet in any convenient direction. The second happens when we are tired of mental or physical labor, but still do not need rest, and so turn to the change and recreation given by

play. In both cases, a play so begun may be carried to the point of exhaustion, because any movement set up in the body tends to repeat itself and to produce a trance-like condition which is irresistible.

The first overflow of energy is illustrated in the activity of a little child in the morning, when he jumps, skips, etc., from good spirits; the recreation, in his later conduct, when he turns from one play to another. In both cases, he may continue until he is tired out.

Such a theory is satisfactory for certain forms of play, but it leaves untouched the question of why the surplus energy and recreation take the particular forms that they do, and must therefore be supplemented from the biological standpoint.

2. The biological standpoint.

We do not find the play instinct in animals that have to support themselves from birth. It develops in proportion as the animal is freed from the serious duties of life. The highly-developed animals are the most unfit to provide for themselves at birth, are the most plastic or educable, and require the longest period of infancy or caretaking. These animals are also the most playful. We do not think of an oyster, and hardly of a chick as playing. But colts, puppies, kittens, are all playful, while the child is the player par excellence, and play is a large part of his training for life.

The superfluous energy and the desire for recreation find the easiest outlets through the channels of instincts, and thus not only recapitulate race experience, but serve the useful function of being an important form of organic exercise. It seems to be true that the spontaneous actions of play are the same as those which the child will need later to use seriously. We

find plays varying in different species of animals, according to their instincts. Thus a puppy plays vigorously at biting, fighting, etc., in his way, and so is trained for actual fighting later. A kitten plays very differently from a puppy, but its play serves equally well to prepare it for its life. Children in like manner play according to the way their ancestors have acted. The channels worn by ages of use are the easiest ones through which superfluous energy can escape, and so both the spontaneous and the imitative tendencies tend to the reproduction of racial activities, hunting of animals, sham fights, and so on. The believers in the culture-epoch theory put here also the plays of tent life, cave life, pastoral life, which most children go through at some time. Some of the games based on the hunting instinct are games of chase, like tag; games of searching, like hide-and-seek; games of hurling, like quoits. Based on the fighting instinct are games of contest, like football; and all that bring out emulation, like racing.

The element of imitation doubtless enters into all these plays, but unless they appealed to some natural tendencies they would not be imitated. In the various kindergarten plays we find an attempt to make this tendency regularly serviceable in education.

Now all these plays which thus reproduce race activities are of value also because they provide a large amount of exercise for the child, and so aid greatly in bodily control. As they reproduce adult activities, however crudely, they train the muscles for those activities. The girl in her playhouse is learning how to handle the household utensils carefully. The boy in his baseball and running games gains a fleetness and

readiness that are serviceable in all but the most sedentary occupations. There is no part of the body left undeveloped by the plays of children. Ordinarily also, this exercise can be secured in no other way. Gymnastics are not comparable with free play, for they exercise only certain sets of muscles and the same sets for all children, whereas free play allows each child to exercise the least used muscles, and also relieves the strain of attention. Further, because children do not enjoy gymnastics especially, they do them only under direction, and do not get as much exercise as from free play. Gymnastics are, of course, valuable when children do not get plays that exercise all the muscles, or when they are deformed or developed unsymmetrically; but, says one writer, the finest type of physical man is not produced by the gymnasia or the palaestra, but by games—rowing and running, football and baseball, golf, tennis, etc. The movement for playgrounds in the city thus assumes as great an importance as the securing of gymnasia, especially because the children do not get any of the natural opportunities for exercise either in work or in play that the country and village children get.

3. The psychological standpoint.

When we approach the question of the mental state of the playing child, one of the most prominent factors is his acceptance of an illusion, his playing of a part. The girl who makes a doll out of a sofa-pillow and the boy who plays soldier, know that they are "making believe," and yet accept the pretense with delight. Lange calls it a conscious self-deception, in which a period of illusion follows a moment of readjustment. The combination of the two is seen in laughing boys in a sham fight.

Groos believes that the delight in the illusion is due to the feeling of freedom in accepting the illusion and joy in being the cause of it. The child is guarded from error by the subconsciousness that he himself created the thing, and so plays joyously with it as if it were a reality. Such plays pass by slow transitions into artistic creation and invention, in which the sense of unreality is replaced by belief in their truth and their social value.

First play an experimenting.

Much of what is called play in babies and little children is rather an experimenting with the senses and motor apparatus for the sake of the new feelings thus produced. Such plays are based directly upon the instinctive demand of these organs for activity, and are lacking in the factor of illusion which we have just mentioned. They serve the biological purpose already mentioned. Numerous illustrations of this might be given from every sense.

1. *Touch.* Very early in life a baby enjoys stroking, and seeks to put everything into his mouth. The latter is done not only when the child is hungry but when he has just been fed, and is enjoyed for the contact with the lips, tongue, etc. In the bath, he gets various sensations by splashing. The baby explores his body, handles all he can reach, and in every way plays with the touch sensations.

2. *Temperature.* The seeking of a stinging air, a cool breeze, a hot sun, not so much to relieve any discomfort as to enjoy them, are instances of play here.

3. *Taste.* The love of having something in the mouth—candy, gum, a clove, an olive stone, tobacco—

testifies to the playful use we all make of touch. Even a stone or a tasteless bit of beeswax satisfies some people when they can get nothing better. The intention in such cases is not, of course, to satisfy hunger, but simply to get new sensations.

4. *Smell.* We do not find play so much in evidence here, although sometimes children do play games that call into use the sense of smell.

5. *Hearing.* We spoke at some length of hearing, under the head of music. Here we have only to note that these first sounds that are heard and produced with so much pleasure, are to the child a form of play. He listens and reproduces, makes up rhymes, and repeats his chain rhymes, Mother Goose, and so on, in a spontaneous enjoyment that asks for nothing more. He is not limited to his own voice, but rattles and shakes and tears anything that he can get hold of, to satisfy his insatiable ear.

6. *Light.* The same is true of sight. Whether it is merely the enjoyment of brightness and color, or the more complex delight in forms and in objects, a child is constantly seeking to produce a new experience or to repeat a pleasurable old one.

7. *Playful movements of the bodily organs.* All this play with the senses involves movement, but we find the child also experimenting in all sorts of ways with his hands and legs and head, putting them into all sorts of positions and enjoying himself immensely. In course of time he learns to run and walk, and then we can see plainly his play in jumping, stamping, rowing, taking difficult steps, climbing and giving himself a thousand tests of skill. He does not limit himself to his own body, either, but takes possession of anything

upon which he can exercise his muscles. He tears paper, shakes keys and all noisy objects, splashes water, and so on.

Considerable observation has been made of children's free play with a view to seeing just what they do when left alone. Many nationalities and classes have been observed with the interesting result that children of the same age, whatever their nationality, or social class, play essentially the same games and plays. The names may differ, but certain characteristics are common to all. As we should expect, the plays of little children of the kindergarten age are much more imitative than those of older children. Playing family and store are by far the most popular both with girls and boys, and in these plays the home life is reproduced, often with startling fidelity. Playing church comes next to these, but it is played only about one-third as much as the others.

Favorite plays.

In observations made on twenty-nine kindergarten children, five to six years old, it was found that in their plays they divided spontaneously into four groups. The first group consisted of the older boys. Their plays contained much action and imagination. In three months thirty-one dramatic plays were observed, such as policeman, fireman, store.

The second group was made up of the older girls. Their plays were also dramatic, but quieter than the boys. Playing house and school were the great favorites.

The third consisted of the smaller children and older bashful girls. They played simple games, but spent most of their time in rushing from one to the

other of the other groups as they were attracted by the games going on.

The fourth group consisted of the left-overs, listless children, who did not seem to care for any game, and spent most of their time in the swing.

All these plays are imitative rather than inventive. It is interesting to notice that usually the same play is played on consecutive days, the interest shifting only by degrees. Thus, if house is played on one day, it is likely to be played for a while the next day. That day another game may be introduced also, and this will be likely to survive the next day and so on. Some plays are played almost every day, but what shifting there is, is of this gradual nature.

The particular play chosen seemed to be selected either because the children liked it very much, or because some child of strong personality forced his liking upon the others even if they did not care for the play. The latter was not at all an uncommon occurrence.

Children below seven years of age rarely play games unless stimulated by older children or by adults. Their plays are individualistic and non-competitive. The question has been raised seriously, therefore, whether the kindergarten should force coöperation upon its children; whether it is not urging them into a stage which they are not yet ready for. Froebel himself, it is urged, says that boyhood, rather than childhood, is the time when the unity with others comes to consciousness, and that childhood is the time for learning to perceive things as distinct. The feeling of unity is vague and the tendency is toward defining

Character of plays of little children.

percepts and ideas, making them distinct rather than related.

The kindergarten period up to the second dentition is especially the toy period. The plays usually center about some object upon which numerous imaginings can be based, the doll, the engine, etc. But it is not at all essential that the toy should be an elaborate one. It is better for a child to be supplied with plenty of material, such as blocks and sand, from which he can make many things, and with some simple toys, than to have expensive mechanisms which he can not shape to his will. He ought to be able to take any toy to pieces and put it together again without injury to it.

Play with toys.

Almost anything will serve a child for a toy, when he is left to his own inventions—flowers and leaves, twigs, berries, grass, bits of glass and china, iron, cloth, etc.—anything that will serve as a peg for his fancy.

It is noticeable, however, that when children make toys, they usually only copy—making sleds, hammers, axes, etc.

The universal toy is, of course, the doll, upon which both the invention and imitation of the child expend themselves to the utmost. We find from Dr. Hall's article that children prefer dolls of certain materials, thus: wax, 22 per cent; paper, 19 per cent; china, 18 per cent; rag, 17 per cent; bisque, 12 per cent; china and cloth, 9½ per cent; rubber, 8 per cent. But lacking these, they substitute: pillows, 4½ per cent; sticks, 3 per cent; bottles, 2½ per cent; dogs, 2 per cent; cats or kittens, 1½ per cent; shawls, 2½ per cent; flowers, 1 per cent; clothes-pins, 1 per

The doll.

cent, to say nothing of such things as toy washboards or wringers in isolated cases.

Any size from 4 to 12 inches suits, but blondes with curly hair and eyes that open and shut are preferred. Babies are liked best before five years, and children after that time.

The mental qualities that are attributed to these first children are as varied as the human nature that the child knows. It is an interesting question how far a child really believes that the doll can feel, be good, jealous, and so on, and how far he is conscious of its lifelessness. In feeding a doll, for instance, 1½ per cent maintain that the doll really is hungry and the same number are in doubt; 2 per cent declare that the doll never is hungry while the great majority either feed the doll or touch the food to her mouth and then eat it themselves. In such cases there is a consciousness of the play, although a child may be really distressed over the doll's cold or sickness.

Among the qualities ascribed to dolls the most common are: goodness, 27 per cent; cold, 24 per cent; inability to love, 22 per cent; weariness, 21 per cent; hunger, 21 per cent; badness, 16 per cent; jealousy, 8½ per cent; hatred, 7 per cent; ability to sleep, 37 per cent.

The love of dolls appears to reach its height in the ninth year although strong from the third year to the twelfth. Many girls play with dolls until they go into long dresses and are ridiculed for their love of it; and not a few ladies confess to the existence of the passion. Dr. Hall questions whether this love is as closely connected with the maternal instinct as we commonly suppose, citing in proof of his statement the fact that many girls who were very fond of dolls, do

not, as women, care much for children, and vice versa. This may be true in isolated cases, but still play is so evidently an imitation of the mother, prompted by instinct, that we must have more than a few contrary instances to invalidate this belief.

During the second dentition, when the association-fibers of the brain are developing rapidly, the plays of children undergo as marked a change as their other activities do. There is first a period of dramatic play, which serves to connect the toy period with the next, and then the plays involve much violent exercise and become highly competitive in character and much more varied. Hide-and-seek, is played by only 8 per cent of boys seven years old and by 55 per cent of boys ten years old.

Plays of older children.

The interest in traditional games—hide-and-seek, tag, prisoner's base, fox and hounds, etc.—most of which involve violent exercise and competition, reaches its height in the tenth year. This is also the period when the love of animals and the desire to possess them are most prominent. If it is feasible, this desire should be gratified and the child taught to take the responsibility of feeding them. Such a care is a valuable training in kindness and unselfishness, and teaches a child to estimate more correctly the kindness of his parents in taking care of him.

Certain differences between boys and girls appear in the ten thousand children observed. As a rule, the girls' games are quieter than the boys'. They play a greater variety of games, and they do not organize as the boys do. Football and baseball are overwhelmingly the favorites with boys, while with girls no one game has

Boys' and girls' plays.

anything like that popularity. Again, no girls took part in the play with the sandpile, except occasionally, and they do not organize societies as boys do.

The following tables show the relative prominence of games and of clubs at different ages. The names at the top indicate the authority for the figures given. Percentages are given in all cases. The two figures indicate the per cents at the two age limits.

	T. R. Croswell. 1000 boys, 1000 girls. Kindergarten-High school			Z. McGhee. 4566 children. 6-18 years			W. S. Monroe. 2000 children. 7-16 years		
	Boys	Girls	Both	Boys	Girls	Both	Boys	Girls	Both
Playing House	6-5	36½-5⅖	Imitation	12-3	31-1				
Playing School	7-1/10	25-3	Imitation						
Playing Horse	16-2	4-3/10	Imitation						
Playing War	5½-3/10	½-1/10	Imitation						
Play with dolls	4-⅜	26-23	Imitation						
With doll furniture	3/10	8-3/10	Imitation						
With teaset	0	24-7	Imitation						
With doll carriage	½	23-8	Imitation						
With leaves	7½-⅕	11-⅗	Imitation						
With flowers	3-1/10	10-1/10	Imitation						
Books and reading	8-7/10	11-2	Imitation						
Music	2-⅖	6-1	Imitation						
Cards	16-3	15-5	Chance						
Checkers	27-8	18-3	Chance						
Dominoes	18-4	13-2	Chance	2-9	3-45				
Hide-and-seek	8 at 55 at	7 y. 10 y.					40	60	
Ball	12-28	5-4					65	35	
Baseball							70		
Running games				31-21	12-1		Football	Tag	31
Fox-hounds, football, tag, etc							32	50	
Games of rivalry				42-65	20-70				
Games with coöperation				25-41	10-10				
Croquet							20	44	
Rhythm and motion							27	73	

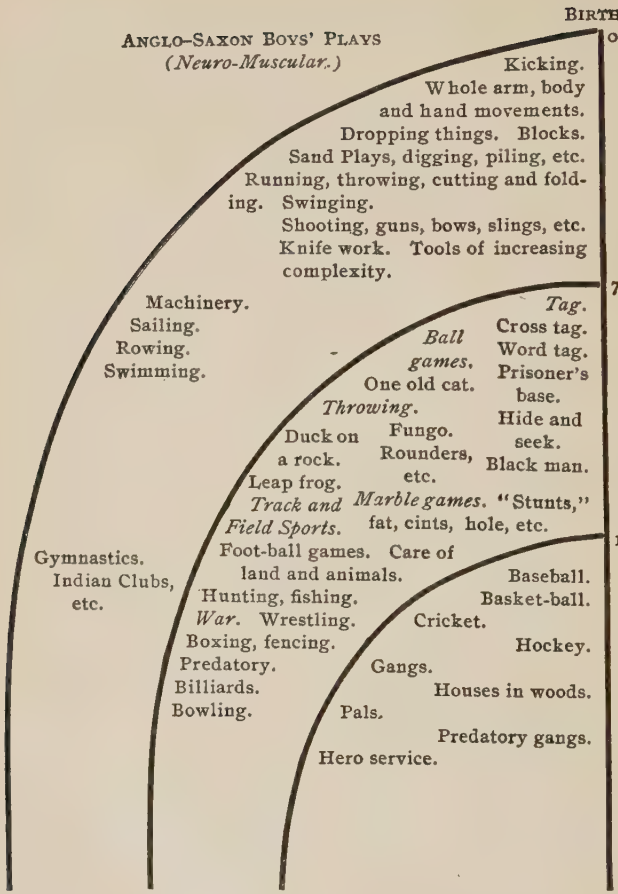

DIAGRAM 15. LUTHER GULICK'S TABLE SHOWING THE ASPECTS OF GROUP GAMES IN BOYS FROM SEVEN TO EIGHTEEN YEARS OF AGE.

(Used by permission of the *Pedagogical Seminary*.)

CLUBS*

	8 yrs.	11 yrs.	12 yrs.	13 yrs.	17 yrs.	Total Number.
Secret Societies:						
Girls	3	.....	18	.....	0	67
Boys	0	.....	3	.....	0	23
Predatory:						
THE Girls	4	0	.....	.....	0	25
GANG Boys	4	31	.....	.....	0	111
Social Clubs:						
Girls	0	.....	22	.....	0	104
Boys	0	.....	7	.....	0	28
Industrial:						
Girls	5	.....	54	.....	1	187
Boys	0	.....	11	.....	2	59
Philanthropic:						
Girls	0	.....	.....	6	.....	22
Boys	1	.....	.....	1	.....	11
Lit., Art:						
Girls	0	.....	.....	.....	15	65
Musical:						
Boys	0	.....	.....	.....	4	28
Athletic:						
Girls	1	.....	.....	15	.....	69
Boys	7	.....	.....	78	.....	406

Psychological value of play.

The psychological value of play has already been touched upon in the theory of play, and so we will emphasize here only its especial importance for nervous children. Wisely directed play can often be made a cure for hysteria, chorea, stuttering, and other such nervous diseases, where development of the muscular control, such as can be gained in play, is a desideratum.

In the cities also, where children do not naturally get the exercise that a country or a village child gets, it is imperative that the exercise should be obtained through play, not only because the body is so developed, but especially because, as we have already seen,

*The table is given in per cents; the totals in absolute numbers

the highest mental and moral virtues can not easily flourish where the body is dwarfed.

Play is an important method of realizing the social instincts and at this point we run across imitation again. Animals in their play imitate the older ones in their hunting and fighting, carrying it to great lengths at times.

Social value of play.

Children in their play with each other have a most important aid to social development.

1. They gain flexibility of mind and self-control. Plays quicken the various mental processes. Some cultivate perception, close observation; others, imagination; others require quick and accurate judgment, and so on. Many cultivate all of these to a marked extent. Self-control is given by all games to a certain extent, for a child learns to meet failure with equanimity, but competitive games especially cultivate this. In all cases where the play is not too intense, the whole emotional nature is gladdened and made buoyant. "Play is the recruiting office and drill sergeant of all the powers of the child."

2. They have endless opportunities for imitation and invention.

The children in any group always divide into two classes—the leaders and the led, the relatively inventive and the relatively imitative, but there is more or less changing of parts here. The imitative child may come to school with a new or taking trick, and thus become the leader temporarily. In both cases, each child learns his own powers and those of the others as compared with him. He gets a certain place in the group, which he can change if he can develop the necessary qualities. He finds the value of coöperation

in all the games where sides are taken, and at the same time the value of individuality and originality if one has ambitions to be a leader. Baldwin says: "To exhibit what I can do alone is to exhibit my importance as an ally. The sense of my weakness in myself is a revelation to me of my need of you as an ally. The presence of a stronger than either is a direct incitement to quick alliance between you and me against him. And the victory gained by the alliance is both a confirmation to us of the utility of social coöperation and a convincing proof to him that society is stronger than the individual. The spirit of union, the sense of social dependence as set over against the spirit of private intolerance; the habit of suspension of private utilities for the larger social good; the willingness to recognize and respond to the leadership of the more competent —all this grows grandly on the play-ground of every school."

"The Story of a Sandpile."

The classical example of the social value of play at its best is given in the "Story of a Sandpile." The story began when two boys, three and five years old, had a pile of sand to play in, and extended over nine years, the play being resumed each summer. The first two summers the play was of a desultory character, digging, making things that were soon destroyed, and so on; but by degrees it assumed an organized character, children of the neighborhood were drawn in, and a miniature village was made. The village was laid out in streets; houses, barns, and other buildings were whittled out, as were also people and animals. Gradually a government was evolved, each boy expressing the opinions

and doing the work of the doll-men who occupied his section of the village. Courts were established, town meetings were held, and all the business of a town transacted, although, of course, crudely. The village became an excellent training school in good citizenship.

The play was carried on only in the summer, but while in their city homes through the winter, the boys would make new men and implements and get all the mechanism of the town ready for the next summer. They had set forms for their men, houses, etc., from which they rarely deviated, although as they grew older they saw the crudity of them. As the boys reached adolescence, they began to lose interest in the village, they became conscious of the observation of their play, and gradually the village became once more only a sand pile, having served fully its educational function.

It seems hardly possible, in view of all these facts, to overestimate the value of play, and here, as in so many other cases, we see again the importance of education following the leading of the child.

In conclusion, then, we may say that from the very earliest time, play has been recognized as a valuable means of education, and that to-day it is used systematically in many schools to develop the child when the appliances of formal education fail.

Theoretically, play includes at least three factors—the physiological, the biological, and the psychological.

Conclusion.

To the first we may refer those plays resulting from an overflow of nervous energy or from a turning of the energy into a new channel for recreation; to the second we refer for the explanation

of the hereditary form which play so commonly assumes; and to the third for the understanding of the factor of voluntary self deception which appears in many games and plays.

When we consider the character of the plays, we see that in babyhood, the so-called plays are in truth only experimenting with the sense-organs and the muscles. Children between three and seven years, play dramatic plays, but all are imitative and, as a rule, non-competitive. They rarely play games. This period is the one when toys, especially the doll, are loved.

Between nine and fourteen years, a great variety of plays appears; the interest in traditional games is strong; all games become highly competitive and involve violent exercise. At adolescence, a strong interest in clubs appears, which endures to a considerable extent. At all ages after babyhood, the social value of play is great, because by it each child is made to see his dependence upon others and his own use to them. Through it he is educated for good citizenship in the world of work.

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CHAPTER XX

Summary

We are now in a position to estimate in a rough way how much has been accomplished by Child-Study up to the present time. In the study of the child's body far more has been done than in any other branch of the subject. The results, however, are not, on the whole, very satisfactory, for while the rhythms of growth in height and in weight are well established, both for the whole period of childhood and for the shorter periods of the year, season, month and day, their causes and their connection with mental development are not yet clearly understood. The most that we are able to say with certainty is that there seems to be a certain average height for each member of a family at a given age, which his body will endeavor to attain even under the most unfavorable conditions, but which it will not much exceed under the most favorable conditions. If growth is stunted by any cause whatever, it has some effect on mental growth, but what effect is not definitely known, although it is probably true that periods of the most rapid increase in weight are the periods when the mind is best able to work. Growth of all parts of the body is far more rapid during the first year of life than at any other time, and is in general more rapid during the early years than the later ones. Babyhood and childhood are therefore the periods when education has the most effect.

When the child's health is poor or his bodily condition abnormal in any way, he is in so far hindered in his mental development. Fatigue means poor attention, poor memory, poor reasoning powers, and lessened moral sense, as well as lessened powers of observation. It may be brought about by a number of causes other than overwork. Bad air, bad lighting, and uncomfortable seats in the schoolroom are potent factors on the physical side; while on the mental side must be considered overworry, fear, and bad habits of study. These factors are probably more important in producing fatigue under our present school conditions than is the one factor, overwork.

There are, however, exceptional children, who are not able to do the normal amount of work on account of some nervous defect. Such children need, more than others, to be properly fed and to have all the surroundings hygienic. They, more than others, need careful individual study in order that we may enter into their mental condition and save them from the loneliness, and from the social uselessness or the criminality into which they may drift if left to develop their abnormal tendencies. In this connection we can not afford to ignore the dangers to which we expose children by leaving them ignorant of the questions of sex. We know that oftentimes children get perverted ideas and learn immorality, when they might have been saved by a little timely instruction.

In considering the growth of the child's mind we first took up sensation and perception. At birth a baby's senses are very undeveloped. He does not distinguish even taste with any accuracy; he is deaf at first and learns to distinguish sounds only after some

months; he can not control the eyes so as to converge them upon one object, and accommodation is not established, so that he sees very indistinctly.

About the second month, however, sight becomes distinct, and thenceforward the baby begins to study the world about him. At first it is principally a visual world, and he exercises himself in connecting with each other the various things that he sees, so as to recognize an object in its different appearances. After the first half year he is greatly helped in this by his hands, and he is aided from the beginning by the touch sensations obtained from putting things into his mouth. Through the combination of touch and sight he thus learns the world of objects and his own body.

His acquisitions here are made permanent as memory arises, and, with the acquisition of memory, come habits. Fleeting at first, enduring hardly for an hour in the second month, memory persists for weeks or months before the end of the first year, and certain memories may endure for life after the third or fourth year. Each age appears to have its characteristic kind of memory, according to the prominent interest of that age, and even where no interest enters, as in learning nonsense lists, there are certain definite laws under which the mind works and which may be used to advantage in teaching.

When a child has become somewhat familiar with the world about him and has stored up some experiences in memory, we find that he begins to play with these experiences and memories, to make new combinations of them in thought; that is, to imagine. This becomes prominent about the third year. At first the play is carried on with very little regard to the actual

occurrences in the outside world. The child's great ignorance of the world, of what is possible and what is impossible, and his enjoyment of his power to do what he will with his images, combine to produce all sorts of grotesque fancies which he is not always able to distinguish from realities.

But as perception becomes more accurate, and as he meets with unbelief and distrust from those to whom he tells his fancies, he learns to create and to invent in a manner that is more in accordance with natural law and with social needs. He confines himself more to changes that he may make in himself and his surroundings, and so we commonly say that he becomes less imaginative. This is not strictly true. He is not less imaginative, but he orders his imagination better. Finally, in most children, imagination becomes so subordinated to the necessities of life that it does little more than enable them to earn their living in the way that those around them do. Thought, playing freely with its images in artistic creation, is put into a strait-jacket by the customs and prejudices which refuse to accept new ideas and starve the man who dares to have them.

As imagination becomes more subject to the laws of things, it becomes closely connected with reason. The child's memories of similar experiences connect themselves together, and he thus gets crude ideas of classes, of law, and of number and time. The process in such cases seems to consist simply in this, that one factor becomes disengaged from the others because it is repeated more constantly or because the attention is directed to it especially. The recognition of cause and effect appears in the beginning to be only a memory of time sequences, especially of the sequences in

the movements of the child's own body and the effects of those movements. As images become more firmly established, the child learns to manipulate them so as to satisfy certain desires; that is, he learns to plan and to form purposes. He adapts means to ends; that is, he reasons. His first adaptations are as crude as his first imaginings, and go through the same process of snubbing and alteration, until, with maturity, he learns to reason, as we say, correctly.

The child employs his imagination and his reasoning powers upon all the subjects which come into his life, as we have seen, but there are two especially important groups which we shall now consider: namely, his religious and his moral ideas. His first religious ideas, like all others, are derived from what he sees going on about him, and he accepts the views of his little world without question, modifying them unconsciously by his own imaginings and by his own interpretations of words, filling out the gaps by his own fancies, until he oftentimes has a new system. From the age of nine, however, doubts begin to appear, and at adolescence are likely to culminate in a thorough questioning of the entire system of religious belief and to end in conversion. The sudden awakening at this time to the importance of religion is due to the profound bodily changes going on, changes which are reflected in the child's mental condition. The character of the conversion varies with the temperament of the child and with what he desires and expects. In many cases it is followed in a year or so by a reaction, a backsliding, which may end either in open rupture with the church or in an intellectual readjustment of belief within the church itself.

The knowledge of good and evil follows the same general course of development as do religious ideas. At first it is simply the acceptance of custom. Obedience to secure pleasures and to avoid pains is the highest morality of the little child. But by degrees he acquires the conception of a law that is beyond any person; and at adolescence the obligation to obey this law becomes an impelling power.

If now we consider the general development of the processes of perception, memory, imagination and thought, we may fancy it as an ever-swelling wave. There is at first but the feeble power of sensation, which is presently reënforced by sense-perceptions. When memory is added, these become far more numerous and distinct. As the memory wave approaches its crest, it bears upon its bosom fancies which, rapidly increasing in volume, swell the already strong torrent of perceptions and memories. And finally comes the wave of conceptions, reaching its culmination at adolescence. After this time the four sweep on together in an ever-swelling tide, each one inextricably mingled with the rest, and the whole made ever more resistless, as reading and travel carry the tide of consciousness on to still greater heights. At last comes the time when flood-tide is reached, when the man, in the full maturity of his powers, does with a mighty strength his chosen work; and then follows the ebb, when little by little the tide sets back, as there pass away first reason and imagination, then memory, and at last even clear perception, leaving once more the old man in the mental state of the baby.

In the discussion of feeling and emotion we saw that there is a great need of further study. With the

exception of anger and fear, practically none of the child's emotional states have been carefully described. Anger and fear appear to be instinctive emotions, but are roused by different objects in different children. Anger is the reaction, at first, against pain, deprivation or disappointment, and seems to be best controlled by diverting the energy into other channels instead of by allowing the child to brood over his injury or to discuss it. Fear seems to be caused by anything that makes the child feel his helplessness, whether the object is known to be dangerous, or is simply strange or mysterious, or startling. The number of fears increases steadily, but the character changes. Imaginary fears and the fear of nature increase as the child grows older.

We know so little of the other emotions that we can make no general statements regarding them.

In discussing the child's doing, we must first note the great division into involuntary and voluntary acts. Involuntary movements are important because they furnish the child with the material for the later voluntary movements. They include all impulsive, reflex, and instinctive movements. At birth the child is able to carry out all the movements necessary to maintain life, but none of them appear to be as perfect as later, after a little exercise in their performance. Other movements, such as movements of the eyes, head, hands, and legs, occur only as the result of stimulation, or as the overflow of nervous energy, and are not under the child's control at first. When they do occur, however, their general character is the same as later when they become voluntary, and they serve thus as involuntary exercises for the child. For

example, the involuntary movements of the hand foreshadow reaching and grasping; those of the legs, walking; the babblings which exercise lips and tongue, talking. The child is thus prepared for the time when the instinct of imitation shall rise to serve as his teacher. This occurs between the fourth and sixth months. Thenceforward the acquisition of voluntary movements of all sorts is very rapid. The order of control of these movements begins with the larger and less complex ones, like the movements of the legs and arms, and proceeds to the finer ones, such as control of the individual fingers, and the rate of increase in control decreases from year to year. As it is often stated, the growth is from control of the fundamental to control of the accessory movements.

When we undertake to trace the changes in any one series of voluntary movements, we find the task much complicated by the constant alterations in the movements due to the developments and changes in the child's interests. Imitation, for example, while it is a true instinct, and is at first largely a mechanical reproduction of what holds the child's eye, is, even as early as the end of the first year, greatly modified by the child's individual interests and surroundings. Any child imitates those forms of the race activities which he sees going on about him—talking, walking, and such bodily activities, as well as all the activities of the household and of the village or town—and is incalculably aided in his individual growth thereby; but such imitation soon becomes but a tool. As soon as he has become somewhat familiar with the movements, he begins to vary them, to make new combinations, in short, to invent. In all this he is repeating on the side

of movement the same growth that we noticed in passing from memory to imagination and reasoning.

The child's drawing shows still more markedly his mental growth. At first a mere scrawl, meaningless to others and to himself as soon as he forgets his intention, it gradually becomes a conscious imitation of something, and then the attempt to reproduce a story or situation, an attempt modified more or less consciously by the child's own imagination. At first a drawing without detail, with many of the most important factors omitted, it by degrees introduces the important things—such as all the parts of the body—and passes on to ornamentations and decorations in which the child's own taste appears. At first a thing which the child enjoys on account of the movements, it becomes a thing which he enjoys for what it means to him, for the sake of the product of which he can criticise the technique. Of the subjects which the child would choose to draw at different ages, we can at present say little, but we can predict with confidence that they would reflect the child's strongest interest at each age. He naturally produces figures in action better than figures at rest, showing here also his strong love of movement, and his tastes would doubtless declare themselves in all the details of his work.

Play, more than any other form of childish activity, shows child-nature, declaring both its past and its possibilities. It is not saying too much to assert that the playfulness of the young of any species is greater the higher the species stands in the scale of life, for the longer the playtime of the young, the more will they be educated and the more will they learn new methods

of protecting themselves and of securing advantages. A long playtime, that is, a long period of preparation for the duties of adult life, is the necessity of progress.

The child begins to play almost at birth or as soon as he begins to delight in the feelings obtained from the exercise of his senses and his muscles. Later on, when through imitative play he has obtained control of his body, he plays with his fancies and ideas, and by means of toys makes for himself a world mingled of facts and fancies, a little cosmos compact of truth and legend, in which he moves freely, glorying in his creative power. But about the ninth year, a new aspect of growth becomes prominent. His rapidly-growing body calls now for more violent exercise, and his developing mind demands more variety and more difficulty. Games that call for physical strength, and in which the element of rivalry is strong, become far more prominent. At this time the old, traditional games have their strongest hold. Latest of all, with adolescence comes the manifestation of the social spirit in the organization of teams and clubs, in which the play is carried on in a systematized way, with a conscious purpose.

Here we must conclude this study of the wonderful child-nature to which we look for the regeneration of the race. So complex is it, so rich and so varied in its forms, that not even the completest study could fully describe it. This résumé has done its part if it has now and then given us a new glimpse of the little child who stands wondering and innocent at the threshold of life, or if it has made clearer to us the truth that to love children wisely we must know them well.

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